Arlington Zoning Board of Appeals

Date: Tuesday, May 2, 2023
Time: 7:30 PM
Location: Conducted by remote participation
Additional Details:

Agenda Items

Administrative Items

1. **Remote Participation**

   In accordance with the Governor's Order Suspending Certain Provisions of the Open Meeting Law, G. L. c. 30A, § 20relating to the COVID-19 emergency, the Arlington Zoning Board of Appeals meetings shall be physically closed to the public to avoid group congregation until further notice. The meeting shall instead be held virtually using Zoom.
   Please read Governor Baker's Executive Order Suspending Certain Provision of Open Meeting Law for more information regarding virtual public hearings and meetings:https://www.mass.gov/doc/open-meeting-law-order-march-12-2020/download

   You are invited to a Zoom meeting.
   When: May 2, 2023 07:30 PM Eastern Time (US and Canada)

   Register in advance for this meeting:
   https://town-arlington-ma-us.zoom.us/meeting/register/tZckcumurz8uHdR5izQRtEdvEHq5GsZ7HizO

   After registering, you will receive a confirmation email containing information about joining the meeting.

Comprehensive Permits

2. **#3747 10 Sunnyside Avenue**

Meeting Adjourn

Town of Arlington, Massachusetts

Remote Participation

Summary:
In accordance with the Governor’s Order Suspending Certain Provisions of the Open Meeting Law, G. L. c. 30A, § 20relating to the COVID-19 emergency, the Arlington Zoning Board of Appeals meetings shall be physically closed to the public to avoid group congregation until further notice. The meeting shall instead be held virtually using Zoom.
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After registering, you will receive a confirmation email containing information about joining the meeting.

Town of Arlington, Massachusetts

#3747 10 Sunnyside Avenue

Summary:

ATTACHMENTS:

	Type	File Name	Description
🗋	Reference Material	00_10_Sunnyside_40_B_App_-_Cover_Letter_and_Table_of_Contents.pdf	Cover Letter and Table of Contents
🗋	Reference Material	01_10_Sunnyside_PEL.pdf	Project Eligibility Letter
🗋	Reference Material	02_10_Sunnyside_501_c_3_letter.pdf	HCA 501 c3 letter
🗋	Reference Material	03_10_Sunnyside_Articles_of_Incorporation.pdf	Articles of Incorporation
🗋	Reference Material	04_10_Sunnyside_Ave_Deed.pdf	10 Sunnyside Deed
🗋	Reference Material	06_10_Sunnyside_Ave_Waiver_List.pdf	Requested Exemptions
🗋	Reference Material	10_Sunnyside_Ave_Zoning_Pro_Forma.xlsx	Pro-Forma
🗋	Reference Material	08_10_Sunnyside_-_Impact_Report.pdf	Impact Analysis of the Natural Built Environment
🗋	Reference Material	09_10_Sunnyside-Traffic_Impact_Study_Rev_1[10].pdf	Traffic Impact Study
🗋	Reference Material	10_10_Sunnyside_Zoning_app--_Dev_Team_.pdf	Roster of Development Team Members
🗋	Reference Material	11_10_Sunnyside_AbuttersList.pdf	List of Abutters and Owners
🗋	Reference Material	13_10_Sunnyside_Ave-_Town_Special_Permit.pdf	Zoning Application and Form
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part1.pdf	Submission Drawings Part 1
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part2.pdf	Submission Drawings Part 2
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part3.pdf	Submission Drawings Part 3
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part4.pdf	Submission Drawings Part 4
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part5.pdf	Submission Drawings Part 5
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part6.pdf	Submission Drawings Part 6
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part7.pdf	Submission Drawings Part 7
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part8.pdf	Submission Drawings Part 8
🗋	Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part9.pdf	Submission Drawings Part 9

Housing Corporation of Arlington

252 Massachusetts Avenue, Office, Arlington, MA 02474

tel: 781.859.5294
fax: 781.859.5632
info@housingcorparlington.org
www.housingcorparlington.org

March 17, 2023

Mr. Christian Klein
Chair
Arlington Zoning Board of Appeals
23 Maple Street
Arlington, MA 02476

RE: Comprehensive Permit Application- 10 Sunnyside Avenue, Arlington

Dear Chair Klein and Members of the Zoning Board of Appeals:

In accordance with the requirements of the Comprehensive Permit regulations of Chapter 40B, we hereby submit our application for the 10 Sunnyside Avenue Development Project in East Arlington.

Per the Comprehensive Permit Regulations, we understand that the Zoning Board of Appeals will schedule a public hearing within thirty days (30 days) of the receipt of this application.

We look forward to working with you and the other ZBA members to bring much-needed, well-designed and sustainable affordable housing to Arlington. As you review the application materials, if you have any questions, please do not hesitate to contact me.

Thank you.

Sincerely,

Erica Schwarz
Executive Director

10 Sunnyside Avenue 40 B Application Table of Contents	
Document	**Zoning Application Requirement**
Project Eligibility Letter	3.2.1, 3.2.3
Housing Corporation of Arlington 501 c 3 letter	3.2.2
Housing Corporation of Arlington Articles of Incorporation	3.2.2
10 Sunnyside Deed	3.2.4
Project Drawings Set	3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9
List of Requested Exemptions	3.2.11
Pro Forma	3.2.12
Impact Analysis of the Natural and Built Environment	3.2.10, 3.2.13, 3.2.16
Statement on Impact on Muncipal Facilities and Services	See waiver list
Roster of Development Team Members	3.2.17
List of Abutters and Owner	3.2.18

Commonwealth of Massachusetts
DEPARTMENT OF HOUSING & COMMUNITY DEVELOPMENT
Maura T. Healey, Governor ◆ Kimberley Driscoll, Lieutenant Governor ◆ Jennifer D. Maddox, Undersecretary

March 16, 2023

Ms. Erica Schwarz
Executive Director
Housing Corporation of Arlington
252 Massachusetts Avenue
Arlington, MA 02474

Re: 10 Sunnyside Avenue, Arlington, MA– Project Eligibility Letter

Dear Ms. Schwarz:

We are pleased to inform you that your application for project eligibility determination for the proposed 10 Sunnyside Avenue project located in Arlington, Massachusetts, has been approved under the Low Income Housing Tax Credit (LIHTC) program. The property is located at 10 Sunnyside Avenue, Arlington, Massachusetts. This approval indicates that the proposed plan is for 43 units of rental housing for families, 43 (100%) of which will be affordable at no more than 60% of area median income. The proposed development will consist of 16 one-bedroom units, 23 two-bedroom units and 4 three-bedroom The rental structure as described in the application is generally consistent with the standards for affordable housing to be included in the community's Chapter 40B affordable housing stock. This approval does not constitute a guarantee that LIHTC funds will be allocated to the 10 Sunnyside Avenue project. It does create a presumption of fundability under 760 CMR 56.04 and allows Housing Corporation of Arlington to apply to the Arlington Zoning Board of Appeals for a comprehensive permit. The sponsor should note that a One Stop + submission for funding for this project must conform to all Department of Housing and Community Development (DHCD) program limits and requirements in effect at the time of submission.

As part of the review process, DHCD has made the following findings:

1. The proposed project appears generally eligible under the requirements of the Low Income Housing Tax Credit program.

2. DHCD has performed an on-site inspection of the proposed 10 Sunnyside Avenue project and has determined that the proposed site is an appropriate location for the project. The project consists of the development of housing on the site of a former auto repair shop in a mixed use neighborhood. It is near the Alewife Brook Parkway recreation path and bus service on Broadway.

3. The proposed housing design is appropriate for the site. The 40 units will be built in a single five-story building. The building will have an elevator and aim for Passive House standards. There will be open space, ancillary office space and a community room.

4. The proposed project appears financially feasible in the context of the Arlington housing market. The proposal includes 43 units for households earning up to 60% AMI, with eight of those units to be reserved for households earning at or below 30% of AMI.

5. The initial proforma for the project appears financially feasible and consistent with the requirements for cost examination and limitations on profits on the basis of estimated development and operating costs. Please note again that a One Stop+ submission for funding for this project must conform to all DHCD program limits and requirements in effect at the time of submission.

6. An as-is appraisal has been commissioned. The Low-Income Housing Tax Credit Program Guidelines state that the allowable acquisition value of a site with a comprehensive permit must be equal to or less than the value under pre-existing zoning, plus reasonable carrying costs. If this project applies for funding under the Low-Income Housing Tax Credit Program, the acquisition price in the proposed budget should reflect these program guidelines.

7. The ownership entity will be a single-purpose entity controlled by the applicants and subject to limited dividend requirements. The ownership entity meet the general eligibility standards of the Low Income Housing Tax Credit program. The applicant will need to demonstrate sufficient capacity to successfully develop the project under the Low-Income Housing Tax Credit program.

8. Housing Corporation of Arlington has an option to purchase the site.

9. The Town of Arlington has submitted a letter of support for the project.

The proposed 10 Sunnyside Avenue project will have to comply with all state and local codes not specifically exempted by a comprehensive permit. In applying for a comprehensive permit, the project sponsor should identify all aspects of the proposal that will not comply with local requirements.

If a comprehensive permit is granted, construction of this project may not commence without DHCD's issuance of final approval pursuant to 760 CMR 56.04 (7) and an award of LIHTC funds. This project eligibility determination letter is not transferable to any other project sponsor or housing program without the express written consent of DHCD. When construction is complete, a Chapter 40B cost certification and an executed and recorded 40B regulatory agreement in compliance with DHCD's requirements pertaining to Chapter 40B must be submitted and approved by DHCD prior to the release of a Low-Income Housing Tax Credit form 8609.

This letter shall expire two years from this date, or on March 16, 2025, unless a comprehensive permit has been issued.

We congratulate you on your efforts to work with the town of Arlington to increase its supply of affordable housing. If you have any questions as you proceed with the project, please feel free to call or email Rebecca Frawley Wachtel at (617) 573-1318 or at Rebecca.Frawley@mass.gov.

Sincerely,

Catherine Racer
Director

cc: The Honorable Leonard Diggins, Chairman of the Arlington Select Board

Internal Revenue Service

Department of the Treasury

P. O. Box 2508
Cincinnati, OH 45201

Date: January 12, 2001

Housing Corporation of Arlington
20 Academy Street, Room 203
Arlington, MA 02476

Person to Contact:
Tonya Martin 31-07387
Customer Service Representative
Toll Free Telephone Number:
8:00 a.m. to 9:30 p.m. EST
877-829-5500
Fax Number:
513-263-3756
Federal Identification Number:
04-2944144

Dear Sir or Madam:

This letter is in response to your letter dated January 5, 2001 requesting a copy of your organization's determination letter. This letter will take the place of the copy you requested.

Our records indicate that a determination letter issued in June 1990 granting your organization exemption from federal income tax under section 501(c)(3) of the Internal Revenue Code. That letter is still in effect.

Based on information subsequently submitted, we classified your organization as one that is not a private foundation within the meaning of section 509(a) of the Code because it is an organization described in sections 509(a)(1) and 170(b)(1)(A)(vi).

This classification was based on the assumption that your organization's operations would continue as stated in the application. If your organization's sources of support, or its character, method of operations, or purposes have changed, please let us know so we can consider the effect of the change on the exempt status and foundation status of your organization.

Your organization is required to file Form 990, Return of Organization Exempt from Income Tax, only if its gross receipts each year are normally more than $25,000. If a return is required, it must be filed by the 15th day of the fifth month after the end of the organization's annual accounting period. The law imposes a penalty of $20 a day, up to a maximum of $10,000, when a return is filed late, unless there is reasonable cause for the delay.

All exempt organizations (unless specifically excluded) are liable for taxes under the Federal Insurance Contributions Act (social security taxes) on remuneration of $100 or more paid to each employee during a calendar year. Your organization is not liable for the tax imposed under the Federal Unemployment Tax Act (FUTA).

Organizations that are not private foundations are not subject to the excise taxes under Chapter 42 of the Code. However, these organizations are not automatically exempt from other federal excise taxes.

Donors may deduct contributions to your organization as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to your organization or for its use are deductible for federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

Housing Corporation of Arlington
04-2944144

Your organization is not required to file federal income tax returns unless it is subject to the tax on unrelated business income under section 511 of the Code. If your organization is subject to this tax, it must file an income tax return on the Form 990-T, Exempt Organization Business Income Tax Return. In this letter, we are not determining whether any of your organization's present or proposed activities are unrelated trade or business as defined in section 513 of the Code.

The law requires you to make your organization's annual return available for public inspection without charge for three years after the due date of the return. You are also required to make available for public inspection a copy of your organization's exemption application, any supporting documents and the exemption letter to any individual who requests such documents in person or in writing. You can charge only a reasonable fee for reproduction and actual postage costs for the copied materials. The law does not require you to provide copies of public inspection documents that are widely available, such as by posting them on the Internet (World Wide Web). You may be liable for a penalty of $20 a day for each day you do not make these documents available for public inspection (up to a maximum of $10,000 in the case of an annual return).

Because this letter could help resolve any questions about your organization's exempt status and foundation status, you should keep it with the organization's permanent records.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

This letter affirms your organization's exempt status.

Sincerely,

John E. Ricketts

John E. Ricketts, Director, TE/GE
Customer Account Services

FORM CD 180 Rev. 4-84 20M-R323711

The Commonwealth of Massachusetts

Office of the Secretary of State
One Ashburton Place, Boston, MA 02108
Michael Joseph Connolly, Secretary

ARTICLES OF ORGANIZATION

(Under G.L. Ch. 180)
Incorporators

NAME	RESIDENCE
Include given name in full in case of natural persons; in case of a corporation, give state of incorporation.	
Deborah Chang	182 Westminster Avenue, Arlington, MA 02174
Alan McClennen	153 Claflin Street, Belmont, MA 02178
Robert Murray	153 Park Avenue Extension, Arlington, MA 02174

601000227

The above-named incorporator(s) do hereby associate (themselves) with the intention of forming a corporation under the provisions of General Laws, Chapter 180 and hereby state(s):

1. The name by which the corporation shall be known is:

Housing Corporation of Arlington 86-237013

2. The purposes for which the corporation is formed is as follows:

To acquire, develop, improve, sell, manage (mortgage, remortgage) and lease affordable housing in the Town of Arlington for low and moderate income families and to provide other social and civic services to benefit low and moderate income members of society.

To purchase, lease, or in any manner to own, hold, improve and develop for any and all purposes, and sell, convey, lease, mortgage, or in any manner dispose of or deal with lands and real property and any estate or interest therein; to contract, acquire by purchase, lease, or otherwise own, operate, manage, supervise and conduct, and to sell, lease, mortgage or otherwise dispose of apartment, apartment buildings, or any other type of residential property.

Note: If the space provided under any article or item on this form is insufficient, additions shall be set forth on separate 8 1/2 x 11 sheets of paper leaving a left hand margin of at least 1 inch for binding. Additions to more than one article may be continued on a single sheet so long as each article requiring each such addition is clearly indicated.

3. If the corporation has more than one class of members, the designation of such classes, the manner of election or appointment, the duration of membership and the qualification and rights, including voting rights, of the members of each class, are as follows: -

N/A

*4. Other lawful provisions, if any, for the conduct and regulation of the business and affairs of the corporation, for its voluntary dissolution, or for limiting, defining, or regulating the powers of the corporation, or of its directors or members, or of any class of members, are as follows:-

See Attachment A

*If there are no provisions state "None".

5. By-laws of the corporation have been duly adopted and the initial directors, president, treasurer and clerk or other presiding, financial or recording officers whose names are set out below, have been duly elected.

6. The effective date of organization of the corporation shall be the date of filing with the Secretary of the Commonwealth or if later date is desired, specify date, (not more than 30 days after date of filing).

7. The following information shall not for any purpose be treated as a permanent part of the Articles of Organization of the corporation.

   a. The post office address of the initial principal office of the corporation in Massachusetts is:

   Fair Housing Office
   Town Hall
   Arlington, MA 02174

   b. The name, residence, and post office address of each of the initial directors and following officers of the corporation are as follows:

	NAME	RESIDENCE	POST OFFICE ADDRESS
President:	Robert Murray	153 Park Avenue Extension Arlington, MA 02174	Fair Housing Office Town Hall Arlington, MA 02174
Treasurer:	Warren Ramirez	15 Pinkham Road P.O. Box 361 Medford, MA 02155	"
Clerk:	Deborah Chang	182 Westminster Avenue Arlington, MA 02174	"

Directors: (or officers having the powers of directors)

See Attachment B

   c. The date initially adopted on which the corporation's fiscal year ends is:

   June 30

   d. The date initially fixed in the by-laws for the annual meeting of members of the corporation is:

   First Wednesday in October

   e. The name and business address of the resident agent, if any, of the corporation is:

   N/A

IN WITNESS WHEREOF, and under the penalties of perjury the INCORPORATOR(S) sign(s) these Articles of Organization this 4th day of October, 19 84

I/We the below signed INCORPORATORS do hereby certify under the pains and penalties of perjury that I/We have not been convicted of any crimes relating to alcohol or gaming within the past ten years; I/We do hereby further certify that to the best of my/our knowledge the above named principal officers have not been similarly convicted. If so convicted, explain.

Robert Murray

Deborah Chang

Alan McClennen

The signature of each incorporator which is not a natural person must be by an individual who shall show the capacity in which he acts and by signing shall represent under the penalties of perjury that he is duly authorized on its behalf to sign these Articles of Organization.

ATTACHMENT A

1. The Corporation shall have, and may exercise in furtherance of its corporate purposes, any and all of the powers specified in Massachusetts General Laws, Chapter 156B, Section 9 (except paragraph M thereof) and the power specified in General Laws Chapter 156B, Section 9A, provided that no such power shall be exercised in a manner inconsistent with Massachusetts General Laws Chapter 180 or any other Chapter of the General Laws.

2. No part of the net earnings of the corporation shall inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Two hereof. No substantial part of the activities of the corporation shall be the carrying on of propaganda, otherwise attempting to influence legislation, and the corporation shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provisions of these articles, the corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code, or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, or corresponding section of any future federal tax code.

3. Upon the dissolution of the corporation, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code, or shall be distributed to the federal government, or to a state or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by the Probate and Family Court of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

ATTACHMENT B

Schedule of Directors	Residence	Post Office Address
William Maytum	25 Ridge Street Arlington, MA 02174	Fair Housing Office Town Hall Arlington, MA 02174
Robert Monahan	8 Bristol Road Peabody, MA 01960	"
Philip Waterman	11 Ronald Road Arlington, MA 02174	"
Joan Gross	4 Wollaston Avenue Arlington, MA 02174	"
Franklin Hurd, Jr.	10 Newton Road Arlington, MA 02174	"
Sr. Winifred Behlen	100 Wildwood Avenue Arlington, MA 02174	"
Wilson Henderson	56 Falmouth Road Arlington, MA 02174	"
Alan McClennen	153 Claflin Street Belmont, MA 02178	"
Ed Tsoi	16 Devereaux Street Arlington, MA 02174	"
Warren Ramirez	15 Pinkham Road P.O. Box 361 Medford, MA 02155	"
Deborah Chang	182 Westminster Avenue Arlington, MA 02174	"
Robert Murray	153 Claflin Street Belmont, MA 02178	"

30138

SECRETARY OF THE COMMONWEALTH

1986 OCT 10 PM 4:05

CORPORATION DIVISION

THE COMMONWEALTH OF MASSACHUSETTS

ARTICLES OF ORGANIZATION
GENERAL LAWS, CHAPTER 180

I hereby certify that, upon an examination of the within-written articles of organization, duly submitted to me, it appears that the provisions of the General Laws relative to the organization of corporations have been complied with, and I hereby approve said articles; and the filing fee in the amount of $30.00 having been paid, said articles are deemed to have been filed with me this 14th day of October 1986

Effective date

Michael J. Connolly

MICHAEL JOSEPH CONNOLLY
Secretary of State

TO BE FILLED IN BY CORPORATION
PHOTO COPY OF ARTICLES OF ORGANIZATION TO BE SENT

TO:

Michael Eby, Esq.

Gilman, McLaughlin, Hanrahan

470 Atlantic Avenue, Boston, MA 02210

Telephone (617) 482-1900

Filing Fee $30.00

Copy Mailed

Return Document to:

Kurt A. James, Esq.
KJP Partners LLP

_____

_____

Number of Pages: 3

Above for Registry use only

QUITCLAIM DEED

MB REALTY GROUP, LLC, a Massachusetts limited liability company with a mailing address at 339 Massachusetts Avenue, Arlington, MA 02474 (the "Grantor"),

for consideration paid and in full consideration of THREE MILLION SEVEN HUNDRED THOUSAND DOLLARS and 00/100 ($3,700,000.00), the receipt and sufficiency of which are hereby acknowledge,

does hereby grant to **HOUSING CORPORATION OF ARLINGTON**, a Massachusetts nonprofit corporation with a mailing address at 252 Massachusetts Avenue, Arlington, MA 02474,

with QUITCLAIM COVENANTS,

the land with the buildings thereon situated in the Town of Arlington, Middlesex County, Massachusetts, commonly known as 10 Sunnyside Avenue and more particularly described on EXHIBIT A attached hereto and incorporated herein.

Grantor is not classified for the current taxable years as a corporation for federal income tax purposes.

Said premises are conveyed subject to and with the benefit of all easements, rights, restrictions, and agreements of record insofar as the same are still in force and applicable. Meaning and intending to convey and hereby conveying the parcel of land and all buildings thereon conveyed to the Grantor by Deed dated December 19, 2019, and recorded on December 23, 2019, with the Middlesex South District Registry of Deeds (the "Registry") at Book 73883, Page 259.

[SIGNATURES ON THE FOLLOWING PAGE]

Property Address: 10 Sunnyside Avenue, Arlington, MA

Executed under seal this 14 day of October, 2022.

MB REALTY GROUP, LLC

By: _____
Name: Jim McIntyre
Title: Manager

STATE OF ILLIONIS

Cook ss.

On this 14 day of October 2022, before me the undersigned notary public, personally appeared **Jim McIntyre**, personally appeared, proved to me through satisfactory evidence of identification, which was ☒ photographic identification with signature issued by a federal or state governmental agency, ☐ oath or affirmation of a credible witness, ☐ personal knowledge of the undersigned, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, as **Manager** of **MB Realty Group, LLC**, as the voluntary act of the limited liability company.

_____
(official signature and seal of notary)
Notary Public: Leonard F Giovenco
My Commission Expires:
8-15-2023

LEONARD F GIOVENCO
Official Seal
Notary Public - State of Illinois
My Commission Expires Aug 15, 2023

Exhibit A

LEGAL DESCRIPTION

Property Address: 10 Sunnyside Avenue, Arlington, Massachusetts

The land together with the buildings thereon in Arlington, Middlesex County, Massachusetts, bounded and described as follows:

Lot A shown on plan entitled "Land in Arlington, Mass., Owned by Grace S. Russell", dated October 25, 1905 by Dana E. Perkins, Surveyor, recorded with said Deeds, Book 3202, Page End, EXCLUDING THEREFROM a 10 foot wide strip of land on the northeasterly side of locus as set forth in Deed of Adler M. B. Hanson et al, dated November 29, 1956, recorded the Middlesex County Southern District Registry of Deeds in Book 8863, Page 437.

10 SUNNYSIDE AVENUE

List of Requested Waivers

Pursuant to 760 CMR 56.05(2)(h), the Housing Corporation of Arlington (hereinafter referred to as the "Applicant"), submits the following list of waivers, so-called, to "local requirements and regulations," including without limitation the Town of Arlington Zoning Bylaw, as amended, Article 16 – Tree Protection and Preservation Bylaw, and other local regulations and requirements as defined in M.G.L. c.40B, §56.02, including all local rules, ordinances, codes and regulations that are more restrictive than state requirements.

LIST OF WAIVERS

By-law Regulation	*Requirement*	*Proposed*	*Waiver*
By-law Section 5, Subsection 5.3.17	For buildings more than 3 stores in height, a 7.5 step back shall be provided at the fourth story or 30 feet above grade, whichever is less, along all building elevations with street frontage.	No step back.	Waiver requested – See Footnote "1".
By-law Section 5, Table 5.5.2.A	Rear setback 10+ (L/10) 24'.	5'	Waiver requested – See Footnote "1".
By-law Section 5, Subsection 5.3.21.A.2.D	10% minimum landscape, 20% minimum usable open space.		Waiver requested. See Footnote "1".
By-law Section 6, Subsection 6.1.12 and the Bicycle Parking Design Guidelines	Long term: 1.5 spaces per residential unit and 0.2/1000 gsf spaces for office use. Short-term 0.1 per residential unit and 0.5/1000 gsf spaces for office use for a total of 70 spaces.	The Applicant proposes 43 spaces. The applicant seeks a waiver from the Bicycle Parking Design Guidelines.	Waiver requested – See Footnote "1".
By-law Section 6, Subsection 6.1.4	1.15 spaces per 1 bedroom dwelling unit, 1.5 spaces per 2 bedroom dwelling unit, and 2 spaces per 3 or more bedroom dwelling units, 1 space per 500 square feet of office gross floor area.	One space per unit	Waiver requested reduction in parking to 25% of that required as permitted by Section 6, Subsection 6.1.5. See Footnote 1.

By-law Section 6, Subsection 6.1.11(C)(11)	Sizes of parking spaces.	To permit more than 20% of spaces to be sized for compact cars.	Waiver requested. See Footnote "1".
By-law Section 6, Subsection 6.1.11(C)(3)	Drive aisles size.	Reduction in drive aisles size.	Waiver requested. See Footnote "1".
By-law Section 6, Subsection 6.1.11(D)(1)-(6) By-law Section 5, Subsection 5.3.7(A) and (B)	Parking lot setbacks, landscaping and screening.	Modifications to parking lot setbacks, landscaping and screening.	Waiver requested. See Footnote "1".
Title IX, Article 3, Sections 4A and 4B – Enforcement and Fees	Town Fees and Charges – Department of Community Safety and Office of Building Inspector.	Fees and charges related to fire safety, building permits, plan reviews, occupancy permits, plumbing permits, gas fitting, infiltration and inflow fees and electrical permits.	Waiver requested allowing for 100% reduction of fees.
Comprehensive permit requirement	Provision of a statement of impact on Municipal Facilities.	A waiver as to the provision of this information.	Waiver requested. See Footnote "1".

FOOTNOTE

1. Absent waivers of these requirements, the proposed project would be uneconomical and the Applicant would be unable to secure financing for the construction of the proposed project. The project is 100% affordable with units offered at 60% of the AMI and 30% of the AMI.

10 Sunnyside Avenue, Arlington	**No. of Units**	**43**
USES		
Acquisition		
Acquisition: Land		
Acquisition: Building		$3,677,156.25
Acquisition: Closing costs		
Acquisition Subtotal		$3,677,156.25
Hard Costs		
Direct Construction Budget		$14,861,050.00
Construction Contingency		$743,052.50
Subtotal: Construction		$15,604,102.50
Soft Costs		
Architecture & Engineering		$1,183,625.00
Survey and Permits		$60,000.00
Clerk of the Works		$100,000.00
Environmental Engineer		$5,000.00
Bond Premium		
Legal		$190,000.00
Title and Recording		$50,000.00
Accounting & Cost Cert.		$85,000.00
Marketing and Rent Up		$30,000.00
Real Estate Taxes		$20,178.00
Insurance		$85,000.00
Solar Panels		$350,000.00
Appraisal		$12,000.00
Security		$25,000.00
Construction Loan Interest		$700,000.00
Inspecting Engineer		$50,000.00
Fees to:	DHCD	$7,000.00
Fees to:	Syndicator	$85,000.00
Market Study		$16,000.00
Credit Enhancement Fees		$50,000.00
Commissioning Fees		$200,000.00
Other Financing Fees		$200,000.00
Development Consultant		$85,000.00
Other:	Construction Testing/ Utilities/ PH Cert	$180,000.00
Other: FFE		$50,000.00
Soft Cost Contingency		$150,863.88
Subtotal: Gen. Dev.		$3,969,666.88
Subtotal: Acquis., Const., and Gen. Dev.		$23,250,925.63
Capitalized Reserves		**$78,568.76**
Developer Overhead		**$611,003.00**
Developer Fee		**$611,003.00**
Total Development Cost		**$24,551,500.39**
TDC, Net		
Residential TDC per unit		$570,965.13
SOURCES		
Private Equity:		
Developer's Cash Equity / Interim Income		
Tax Credit Equity (net amount)		$9,750,000.00
Developer's Fee/Overhead, Contributed or Loaned		
Other Source: State Tax Credit Equity		$2,905,000.00
Total Private Equity:		$12,655,000.00
Public Equity:		
HOME Funds, as Grant		
Grant:	Arlington CPA (Sponsor Loan)	$750,000.00
Grant:		
Grant:	North Suburban Consortium	$637,500.00
Grant:	Passive House Incentives	$132,500.00
Total Public Equity		$1,520,000.00
Subordinate Debt:		
Home Funds-DHCD, as Subordinate Debt		$4,300,000.00
Source: Blend of HIF, HSF, AHTF, etc.	(max $100k per unit)	
Mass Housing Subsidy		
Source:		
Subordinate Debt		$1,114,173.00
Source: FHLB of Boston		
Subordinate Debt		
Source:		
Subordinate Debt		
Source:		
Total Subordinate Debt		$5,414,173.00
Permanent Debt (Senior):		
Mass Housing		
MHFA		
MHP Fund Permanent Loan		
Other Permanent Senior Mortgage		$4,962,327.39
Source:		
Other Permanent Senior Mortgage		
Source:		
Total Permanent Senior Debt		$4,962,327.39
Total Permanent Sources		**$24,551,500.39**
Delta Sources and Uses (Gap/Surplus)		$0.00
Construction Period Financing:		
Construction Loan		$17,186,050.27

10 SUNNYSIDE AVENUE
Arlington, MA 02474

IMPACT ANALYSIS REPORT

Submitted to:
Town of Arlington

Applicant:
Housing Corporation of Arlington
252 Massachusetts Avenue
Arlington, MA 02474

Architect:
Utile Architecture and Planning, Inc.
115 Kingston St.
Boston, MA 02111

Civil Engineer:
Samiotes Consultants, Inc.
20 A Street
Framingham, MA 01701

utile

HCA
Housing Corporation of Arlington

samiotes

March 9, 2023

10 SUNNYSIDE AVENUE
Arlington, MA 02474

TABLE OF CONTENTS

10 SUNNYSIDE AVE.
ARLINGTON, MA
IMPACT REPORT
AND STORMWATER MANAGEMENT NARRATIVE

February 2023

1. Introduction

10 Sunnyside Ave. is a proposed residential building to be located at 10 Sunnyside Avenue in Arlington, MA (Zoning District: B4 – Vehicular Oriented Business). The project is an affordable housing building consisting of a proposed 49,000 gross square foot (GSF) 5-story new building with 43 residential units. The project is an infill redevelopment of an existing 16,500 sf (.38 acre) lot. Additionally, the project will create a stormwater management system as part of the site improvements surrounding the building, including vehicular parking spaces and covered bicycle parking spaces.

1.a Project Overview

The proposed project will redevelop a parcel currently occupied by a vacant auto repair building and neglected site to allow for the construction of a 43-unit affordable housing building. As noted above, the site will be an infill redevelopment of an existing 16,500 sf (.38 acre) parcel. A new covered parking area will be located in the northeast and northwest portions of the site's ground floor. Stormwater management for the proposed project is designed to mitigate the peak stormwater rate of runoff resulting from the full build-out of the project. Though the site hosted an auto body shop, the soils were found to be not contaminated.

Aligning with the town's Master Plan and Housing Plan, the project includes the following:

- 43 apartments: (16) 1-bedroom; (20) 2-bedroom; (7) 3-bedroom
- 21 Car Parking (.49 per unit)
- Min. 43 bike parking spaces (at least 1 per unit)
- New sidewalk to support walkable public realm
- Roof deck garden of ~ 2,000 square feet
- Community room
- Highly energy efficient; Passive House certified
- Rooftop Photovoltaic Panels
- 100% affordable with maximum household income of 60% AMI and units in reserve for 30% AMI

2. Existing Site Conditions

2.a Physical Environment

The existing project site is 16,500 sf in size with a 150 foot existing street frontage. It is bounded by Sunnyside Avenue to the southeast, an industrial service building to the northeast, the Beth Israel Lahey Medical Center and retail developments to the northwest and retail building to the southwest. The existing site consists of an automotive repair shop with primarily impervious land coverage areas. The impervious areas consist of an existing building along the southwest side, parking to the northeast, an access drive, walkways, ramps, and retaining walls starting from the building at the west corner of the site, running along the perimeter to the east corner of the site at

Sunnyside Avenue. The pervious areas include grassed/ landscaped areas along the perimeter of the site. There is a debris/soil pile in the middle of the lot.

In the current conditions, the site has minimal stormwater management control and treatment. The on-site tributary stormwater from the building is managed/ conveyed by roof drains and piped underground. The stormwater from the surrounding site sheets overland into Sunnyside Avenue to the east.

The existing slopes range from 1% to 5% where the overall grade slopes at approximately 1% toward Sunnyside Ave.

The Alta Land Title Survey, prepared by CHA Consulting, Inc., illustrates the existing site, including surface features, topography, utilities, and landscaping.

There are no trees located in the site, and no tree removal during construction. Refer to the existing conditions survey. There are no significant environmental features in the site, such as ledge outcrops, scenic views, or large trees.

Regional Context

Land use surrounding the property is primarily populated by retail and commercial establishments. Other nearby land use includes a medical facility, fitness center, industrial service company, Alewife Greenway Bike Path, and a residential neighborhood. Figure SKCE-001 (Site Locus Plan included in the Appendix) depicts the context of the property in relation to the surrounding area.

2.b Habitats, Species of Concern

The site will not have an adverse impact on wildlife or species of concern. This site is not deemed a habitat (priority or estimated) of rare wildlife per the Natural Heritage & Endangered Species Program (see Figure SKCE-004 in the Appendix of this report).

The property is located along Sunnyside Ave, and is bounded by commercial development on its sides and a paved parking lot to the rear. As noted below (2.c), the site is predominately impervious and there are no plantings or trees on the site.

Given the existing site condition and urban landscape context of the site, wildlife habitat function is limited. To the extent wildlife habitat exists along the Alewife Brook corridor, the site is separated by Sunnyside Ave, commercial properties, and parking lots.

2.c Recreation & Open Space Amenities

Under existing conditions, the site hosts the following:

- Existing auto shop, 4,625 sf footprint
- Concrete ramp to sub-grade level at body shop
- Remainder paved area with a 2,800 sf debris pile, approximately 5-feet high

There are no existing trees on the site.There are no existing open space amenities on the site.

Given the nature of this project as an infill redevelopment for housing, the building will occupy 85% of the site. The project proposes to provide a planted second level deck that is connected to the community room as an outdoor amenity to residents and guests who are reserving said community room. This rooftop deck will be 2,000 sf in area. Plantings will be small native trees, native shrubs and native ornamentals.

The project proposes the creation of new sidewalks along the front of the building and will work with the town to tie into future sidewalks along the west of Sunnyside Ave. There will be new native trees along the sidewalk, and new native plantings adjacent to the building entrance. This is consistent with the goals of the Arlington Master Plan as it relates to providing a walkable urban realm.

The site enjoys proximity to great natural outdoor spaces. 10 Sunnyside is located very close to the Alewife Greenway Bikepath, the Alewife Brook, and St. Paul's Cemetery. Outdoor sports and activities amenities, including a playground, baseball fields, tennis courts, and Dilboy Pool & Stadium, located along the Greenway to the east of the site, are all within 5-10 minutes walking time. North Union and Crosby Parks are within 0.5 mile of the site (see Appendix 07)

2.d Wetlands, Bodies of Water
The site is located approximately 400 feet to the west of Alewife Brook, and approximately 0.5 mile south of Mystic River. The site is outside of the floodplain overlay district and wetland district per Sections 5.7 and 5.8 of the Arlington Zoning Bylaw. (see Figures SKCE-003 and SKCE-006 in the Appendix).

2.e Historic & Cultural Resources
There are no cultural or historic resources on the site. The project will not have any adverse impact on Arlington Historic or Cultural Resources. (See Appendix 08, MACRIS Map)

3. Water and Soils

3.a Existing Soils

Soil types have been identified based on the information contained in the Soil Report (see Soil Report within appendices of this report). Based on the available soil information provided in the appendices of this report, we have determined that the soils are consistent with Hydrologic soil type "B" which require runoff to be infiltrated (as listed in the table below) from new impervious areas. The soils report is located in the Appendix of this report. The infiltration on the site was determined by using the value of a "B" soil from the MA Stormwater Handbook Rawl's Rates.

3.b Erosion & Sediment Control

Disturbed areas during construction will be protected by temporary erosion control measures to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharging offsite.

3.c Stormwater Management

Stormwater runoff from the building rooftop will be conveyed to the Infiltration System under the garage floor where it will recharge the groundwater through infiltration. An overflow will be

provided to a drywell under the garage floor prior to connecting to an existing stormwater pipe in the east corner of the lot.

The objective of the stormwater management for the site is to mitigate any increase in peak storm runoff rates, while meeting/exceeding established stormwater quality thresholds, due to the construction of the proposed project. Outlined below are several Best Management Practices (BMP's) that are proposed to be incorporated into the overall stormwater design.

Proposed Stormwater Control Systems:
The following are the proposed Best Management Practices (BMP's) stormwater control systems to be used on the site to mitigate an increase in peak stormwater runoff and improve water quality:

Subsurface Structures (Infiltration Chambers): Subsurface structures are underground systems that capture runoff, and gradually infiltrate it into the groundwater. There are a number of underground infiltration systems that can be installed to enhance groundwater recharge. Subsurface structures are constructed to temporarily store stormwater and promote infiltration into the underlying soils. They are feasible only where the soil is adequately permeable and the high groundwater table and/or elevation is sufficiently below the bottom of the system. They can be used to control the quantity as well as treat stormwater runoff, if properly designed and constructed. The structures serve as storage chambers for captured stormwater, while the soil matrix provides treatment.

Drywell: A drywell (also known as leaching catch basin) is a pre-cast concrete barrel and riser with an open bottom that permits runoff to infiltrate into the ground. An 80% TSS removal is awarded to the deep sump catch basin/leaching catch basin pretreatment combination provided the system is off-line.

Watershed Routing

Below is a summary of the various existing and proposed watersheds with a brief narrative describing the routing. The descriptions of the watersheds are depicted in sketches Ex-HYD and P-HYD located in the Appendix.

Existing Watersheds:

Ex-Watershed-1: This watershed includes the entire project site which generally slopes from west to east. The impervious areas include the building, concrete ramps, paved parking lot, driveway, walkways and walls. Pervious areas include planters and landscaped areas. Stormwater runoff from this watershed is conveyed/sheet flows towards the existing catch basin in Sunnyside Avenue west of the site depicted as POA-1.

Proposed Watersheds:

PR-Watershed-1:This watershed consists of the majority of the 10 Sunnyside Ave. site including all the building roof, and paved pedestrian walkways. The stormwater runoff within the roof of the building /parking garage is conveyed by the roof leaders and piped to the underground infiltration system made of HDPE chambers. The infiltration chambers outlet to a drywell in the east corner of the site before tying into the existing 10" PVC pipe at the property line.

PR-Watershed-2:This watershed consists of a small area to the east of the building with the impervious areas consisting of the driveway to the parking garage and concrete sidewalks. Pervious area within this watershed includes landscaped areas surrounding the perimeter of the site. The stormwater runoff within this watershed will sheet flow to the existing catch basin in Sunnyside Avenue.

Analysis:
The analysis was based on the pre- and post-development peak discharge rates at the Point of Analysis. The proposed construction of 10 Sunnyside Ave. will result in an increase in impervious area, therefore the proposed stormwater management system will be designed to mitigate any increase in the rate of runoff and improve stormwater quality. Rainfall amounts used for the design and analysis are based on the NOAA Atlas 14+ Point Precipitation Frequency Estimates for Arlington.

Results/ Summary

Results of Analysis:
Through the use of the HydroCAD Software, the curve numbers, times of concentrations, and peak discharge rates were determined for both the existing conditions and the proposed conditions. The results of the study shows that both the post-development peak rates of runoff are equal or less than the existing rates.

As shown in Table A, the post development peak rates of runoff from the site will be mitigated.

Table A – POA 1 Sunnyside Ave
Peak Rates of Runoff (cfs)

	2-year storm	10-year storm	25-year storm	100-year storm
Existing	1.16	1.86	2.29	2.96
Proposed	0.70	1.15	1.45	2.39

Untreated Stormwater

The project is designed so that stormwater conveyances (outfalls/discharges) do not discharge untreated stormwater.

Post-development peak discharge rates

The proposed project will result in an increase in impervious area. The proposed stormwater management system has been designed so that there is no increase in post construction discharge rates from the site. See Table A above.

Recharge to groundwater

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally-sensitive site design, Low Impact Development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post- development site shall approximate the annual recharge from

pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Soil types have been identified based on the information contained in the Soil Report. We have determined that the soils are consistent with Hydrologic soil type “A” “B” “C” and “D” which requires runoff to be infiltrated (as listed in the table below) from new impervious areas.

The proposed development will result in an increase in impervious area in the “B” soil areas. Therefore, 0.35 inches of runoff will be required to be infiltrated for the new impervious areas.

Hydrologic Group Volume to Recharge (x Total Impervious Area)	
Hydrologic Group	Volume to Recharge x Total Impervious Area
A	0.60 inches of runoff
B	0.35 inches of runoff
C	0.25 inches of runoff
D	0.10 inches of runoff

Required Recharge Volumes:

“B” Soils

Infiltration Rate: 0.35 inches of runoff
Proposed Site New Impervious Area in “B” Soils: 3,310 sf
3,310 sf x 0.35 x (1/12) = 97 cf

Total required recharge volume (unadjusted): 97 cf

Proposed Recharge Volume:

Infiltration System #1 = 235 cf
Drywell #1 = 11 cf

Total provided recharge volume: 246 cf

Drawdown Time:
INF-1 (maximum time 72 hours)= 235 cf / (1.02 in/hr x 650 sf / 12 in/ft) = 4.25 hour
Drywell-1 (maximum time 72 hours)= 11 cf / (1.02 in/hr x 23.76 sf / 12 in/ft) = 5.45 hour

TSS removal

The site watersheds contain “clean” roof runoff areas that are excluded from this calculation.

Water Quality Volume:

The stormwater management system has been sized to treat for the 0.5” runoff rate applied to the total impervious area for the water quality volume, as shown in the calculations provided below. The calculations for the infiltration stormwater BMPs are shown below. Where site topography and groundwater elevation precluded the use of infiltration BMPs, proprietary water quality unit are proposed which are specifically designed to address water quality prior to discharge. The areas considered “clean” roof runoff have been excluded from this calculation.

Impervious area requiring water quality treatment= 32 sf
32sf x .04165 ft = 2 CF

Total Water Quality Volume Required = 2 CF

Proposed Water Quality Volume:
Infiltration System #1 = 235 cf
Drywell #1 = 11 cf

Higher potential pollutant loads

The proposed project site does not contain Land Uses with Higher Potential Pollutant Loads. The site improvements aim to reduce the potential pollutant loads from the existing automotive mechanic building to a residential building.

Protection of critical areas

Critical areas are Outstanding Resource Waters (ORW) as designated in 314 CMR 4.00, Special Resource Waters as designated in 314 CMR 4.00, recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for groundwater sources and Zone As for surface water sources), bathing beaches as defined in 105 CMR 445.000, cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04, and shellfish growing areas as defined in 314 CMR 9.02 and 310 CMR 10.04.

The site is not located within critical areas.

Construction Period Pollution Prevention and Erosion and Sedimentation Control

Soil Erosion and Sediment Control Plan:
The objectives of the Soil Erosion and Sediment Control Plan are to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharge to critical zones such as streams or wetlands. Soil erosion control does not begin with the perimeter sediment trap. It begins at the source of the sediment, the disturbed land areas, and extends down to the control structure.

The Soil Erosion and Sediment Control Plan will be enacted in order to protect the resource areas during construction. The erosion control devices will remain in place until all exposed areas have been stabilized with vegetation or impervious surfaces.

The objective of the Soil erosion & Sediment Control Plan that will be enacted on site is to control the vulnerability of the soil to the erosion process or the capability of moving water to detach soil particles during the construction phase(s).

Operation/Maintenance plan

An Operation and Maintenance plan for both construction and post-development stormwater controls has been developed. The plan includes owner(s); parties responsible for operation and maintenance; schedule for inspection and maintenance; routine and non-routine maintenance tasks. A copy of the O&M is included in the Appendix.

4. Demonstration of Compliance with Arlington's Master Plan Housing Production Plan, and Open Space and Recreation Plan

Arlington Master Plan
The project supports Arlington's Master Plan through the following:

- Enhancing the quality of the built environment by redeveloping a vacated light-industrial lot with a multi-family building, contributing to the residential community of Sunnyside Ave near Broadway.
- Providing mixed-use affordable development with housing options for different incomes, family sizes, and needs.
- Contributing to the small-business economic vibrancy of Sunnyside Ave and Broadway which contains several small businesses.
- Proposed sidewalk and planting enhance the quality of the built environment and pedestrian realm along Sunnyside.
- Increase traffic safety along Sunnyside through construction of curbed sidewalks building security features. The team will work with the town to promote public street safety features for pedestrians.
- Supporting the use of bicycles through ample and diverse bicycle storage units.
- Design to meet high-performing PHIUS certification
- Planting native species along sidewalks and second level deck.
- Creating affordable housing development that has easy access to Alewife Brook, the Alewife Brook Bike Path, and the many outdoor recreation features along the brook's corridor.
- No adverse impact to wildlife or open spaces.

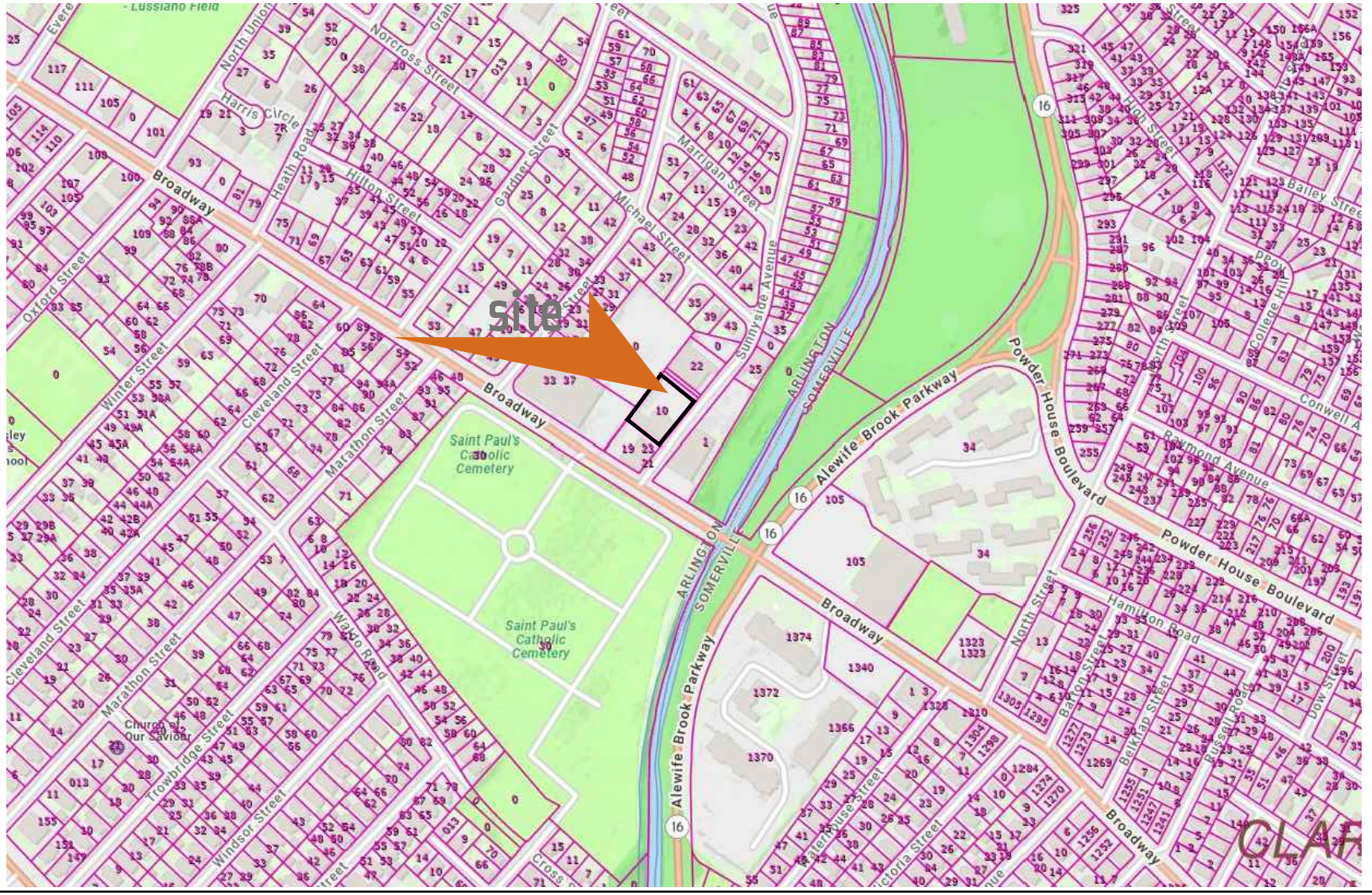
Arlington Housing Production Plan
The project supports Arlington's Housing Production Plan through the following:

- Contributes 43 units towards the town's Chapter 40B 10% affordable housing minimum
- Proposes multifamily residential along business-oriented zone of the Broadway corridor
- Responds to town's zoning revisions for multifamily residential in a business district, which came from the production plan
- Offers diversity of unit types and sizes to support demographic diversity
- Offers significant level of affordability:
    - Maximum household income: 60% AMI
        - $67,320 for household of 2
        - $84,120 for household of 4
    - Some units reserved for maximum incomes of 30% AMI
        - $33,650 for household of 2
        - $42,050 for household of 4

- Sustainable redevelopment of an existing lot along Broadway corridor near Mass Ave.

Arlington Open Space and Recreation Plan
The project supports Arlington's Housing Production Plan through the following:

- Adheres to town's regulatory policy centering on redevelopment.
- Adheres to town goals of environmental sensitivity to enhance the natural environment.
- Adding street trees to increase the town's tree canopy
- Working with the town to create safe pedestrian sidewalks along Sunnyside, which in turn increases safe walking routes to Alewife Brook and the Bike path
- Implementing Stormwater management on the site
- Affordable housing to be provided on a site that is very close to Open Space / Recreational Areas in EJ Area – Map #3 in Table 4-8 of the Housing Production Plan



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Reference Drawing	-

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

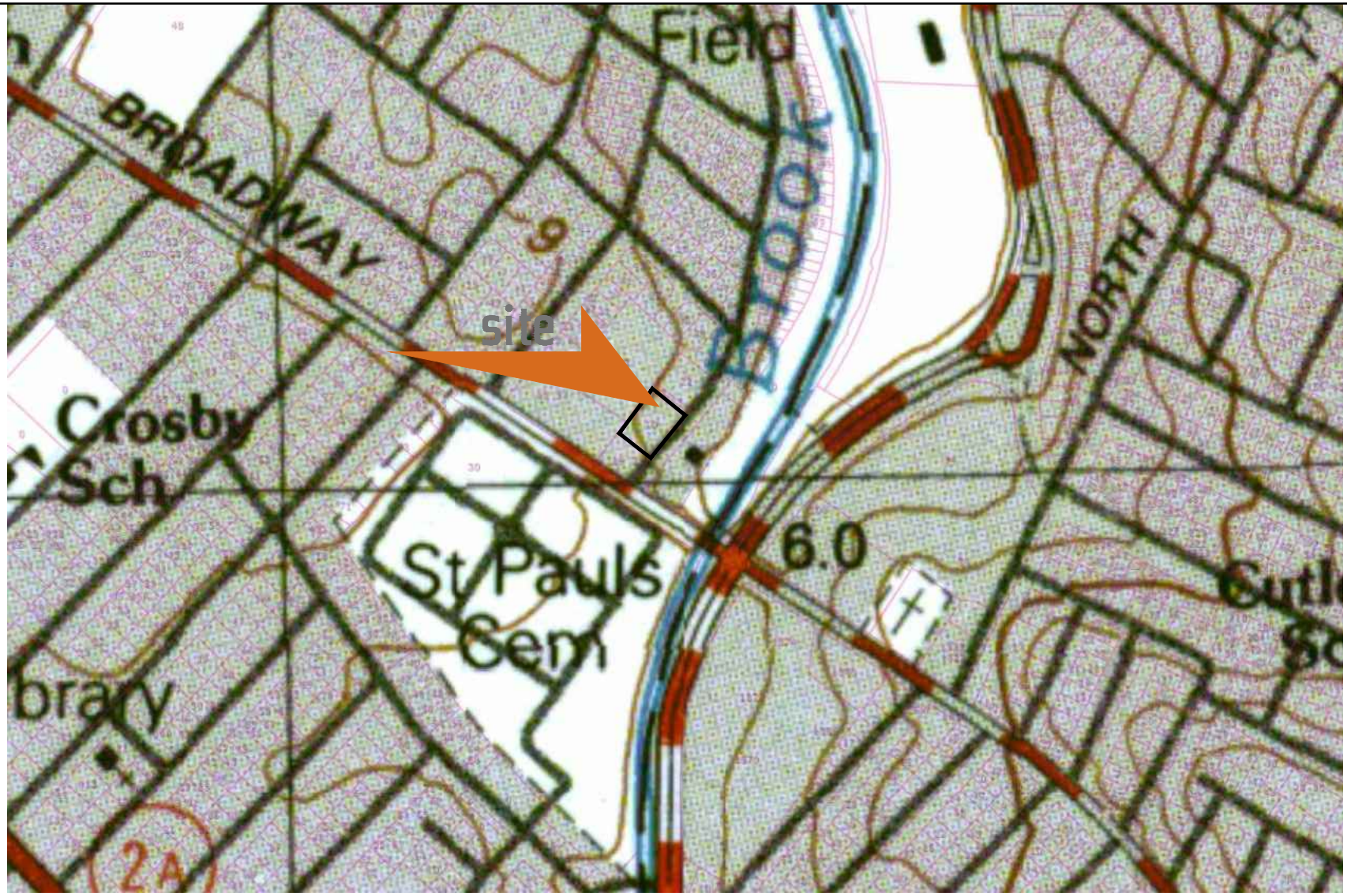
Title: REGIONAL CONTEXT MAP

Samiotes Consultants Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701

T 508.877.6688
F 508.877.8349

www.samiotes.com



Sketch No.	SKCE-002
Reference Drawing	-

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

Title: USGS TOPO MAP

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T 508.877.6688
F 508.877.8349

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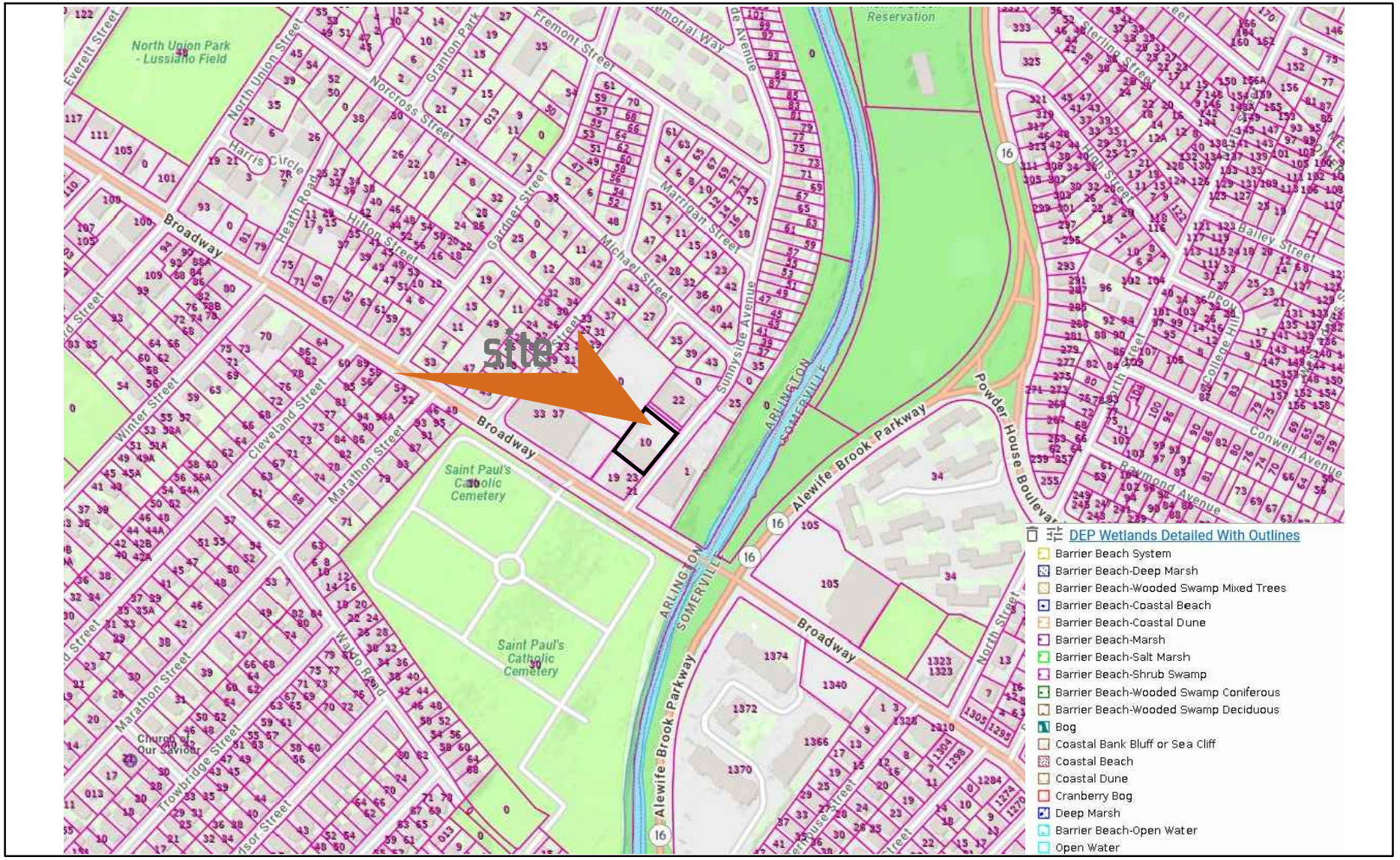

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Reference Drawing	-
Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

Title: RESOURCE AREAS MAP

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20 A Street
Framingham, MA 01701

T 508.877.6688
F 508.877.8349

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Sketch No.	SKCE-004
Reference Drawing	-
Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

Title: NHESP MAP

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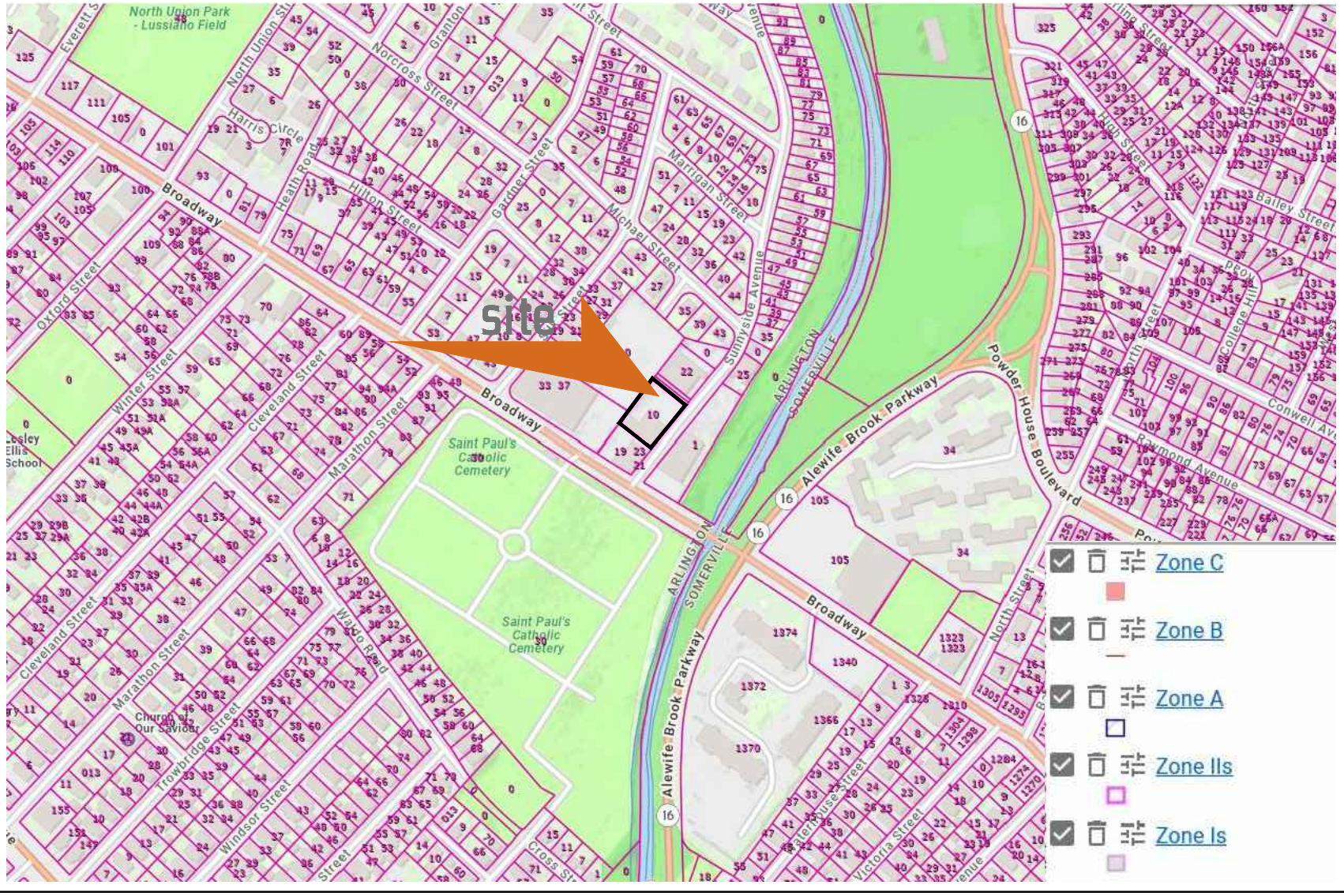
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701

T 508.877.6688
F 508.877.8349

www.samiotes.com



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Reference Drawing	-

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Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

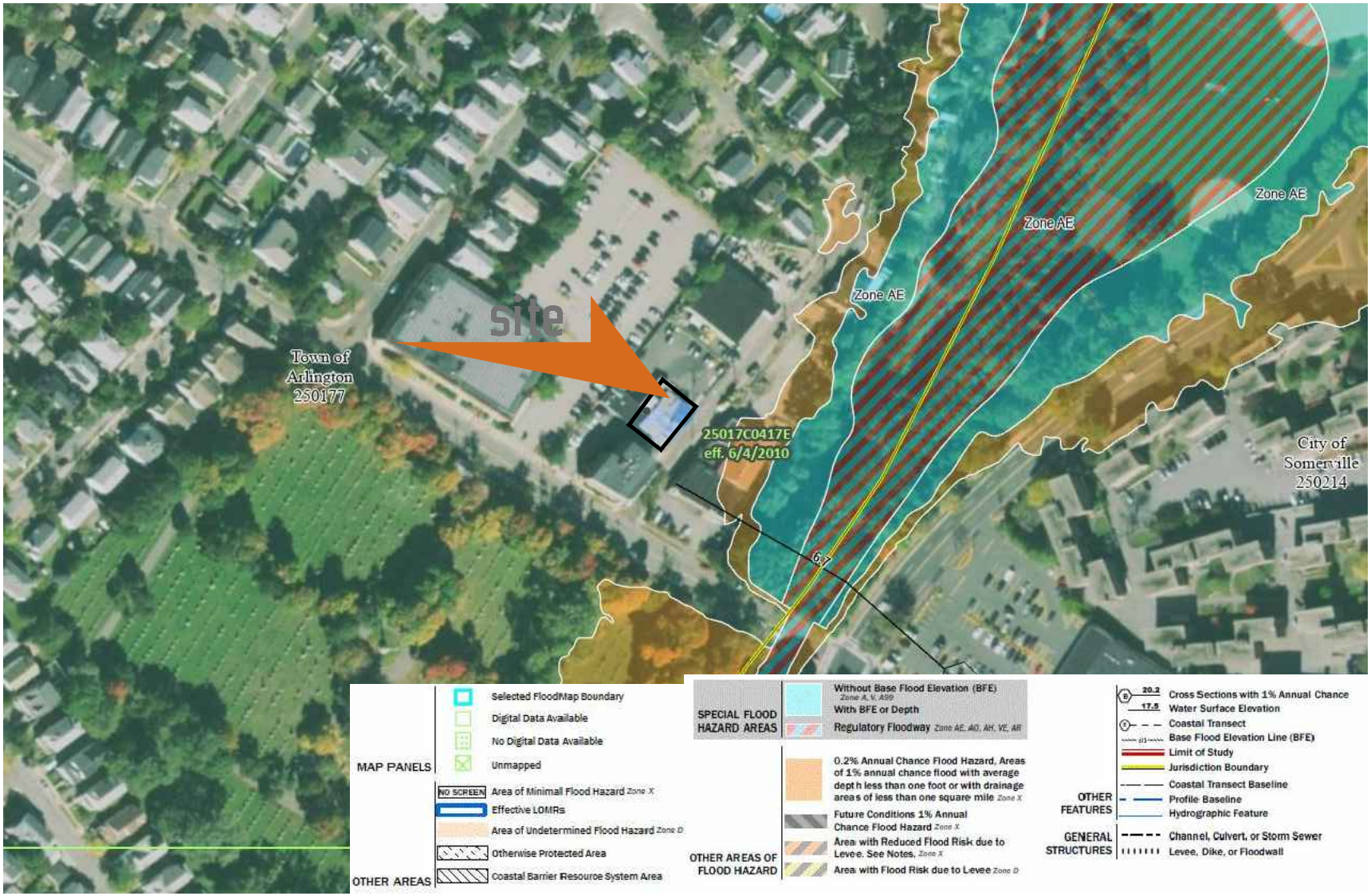
Title: ZONE I, ZONE II, ZONE A
ZONE B, ZONE C

Samiotes Consultants Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701

T 508.877.6688
F 508.877.8349

www.samiotes.com



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Reference Drawing	-

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

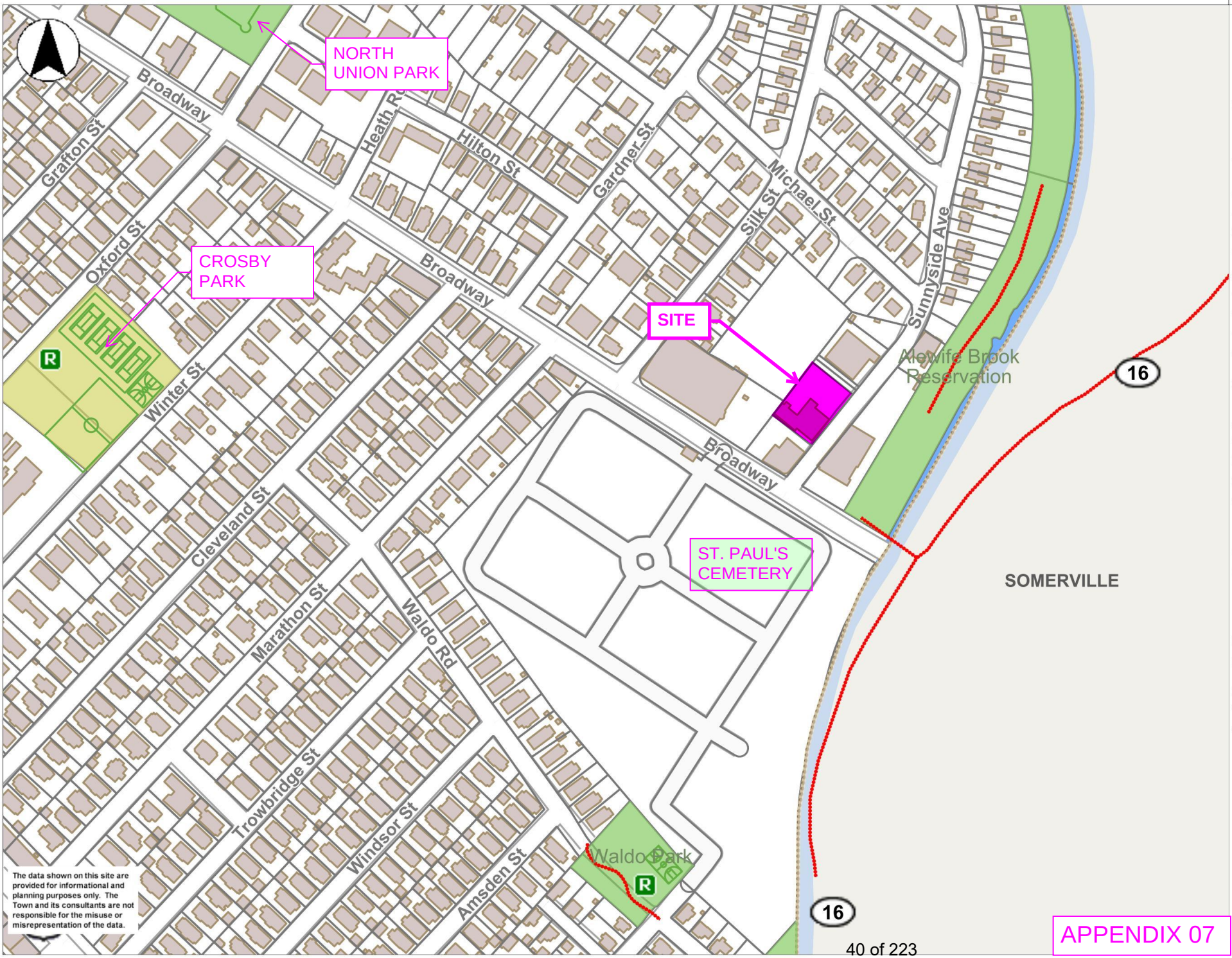
Title: FEMA FLOOD MAP

Samiotes Consultants Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701

T 508.877.6688
F 508.877.8349

www.samiotes.com



APPENDIX 07

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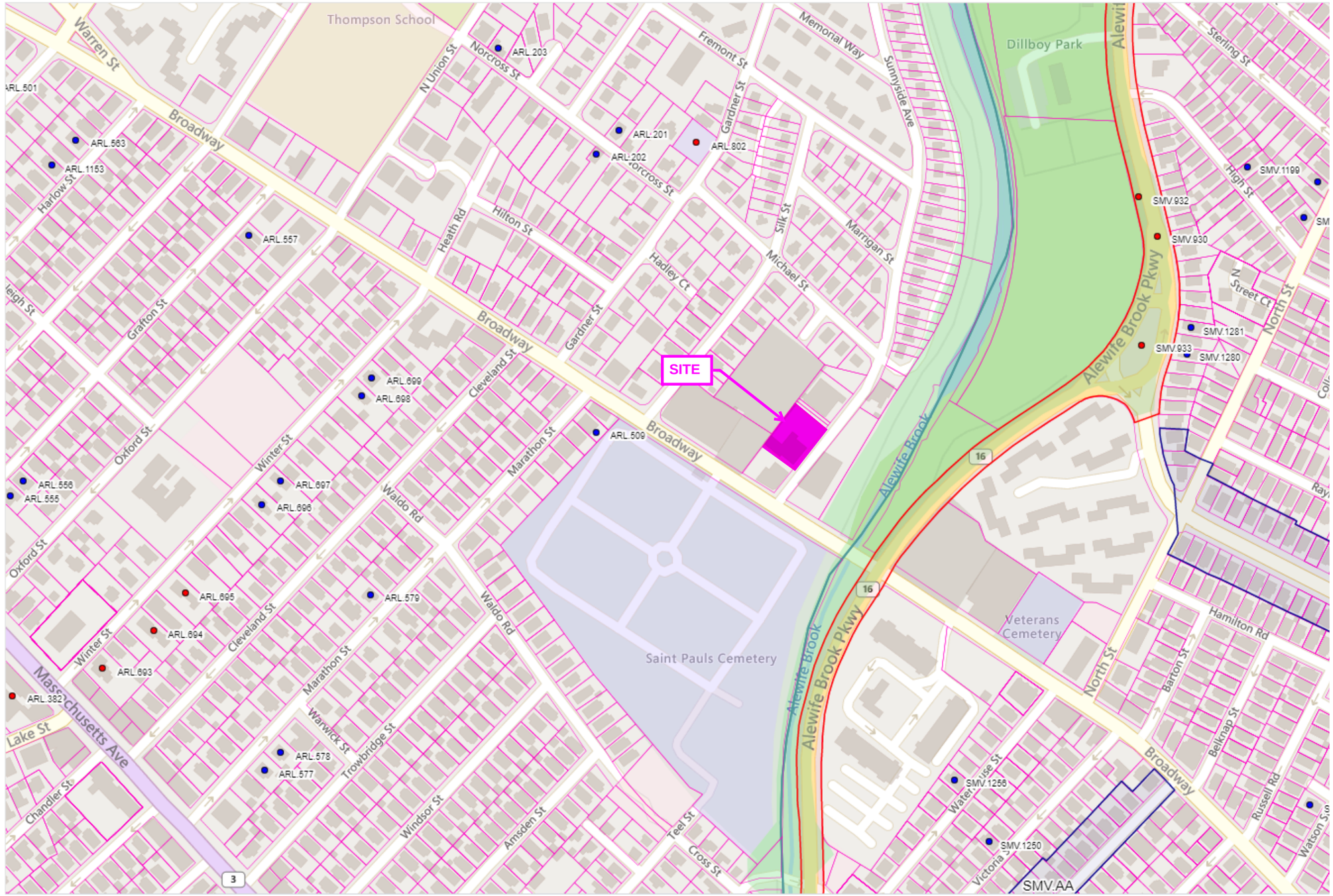
Town of Arlington, MA

APPENDIX 08

MACRIS Map



MHC Inventory Areas

- National Register Historic Places
- Preservation Restriction
- Local Historic District
- Local Landmark
- National Register Historic Places & Local Historic District
- National Register Historic Places & Local Landmark
- Massachusetts Historic Landmark
- Inventoried Area

MHC Inventory Points

- National Register Historic Places
- Preservation Restriction
- Local Historic District
- Local Landmark
- National Register Historic Places & Local Historic District
- National Register Historic Places & Local Landmark
- Massachusetts Historic Landmark
- Inventoried Property

MHC Update Status

- Updates Pending
- Completed

Building Structures (2-D)

- Building Structures (2-D)

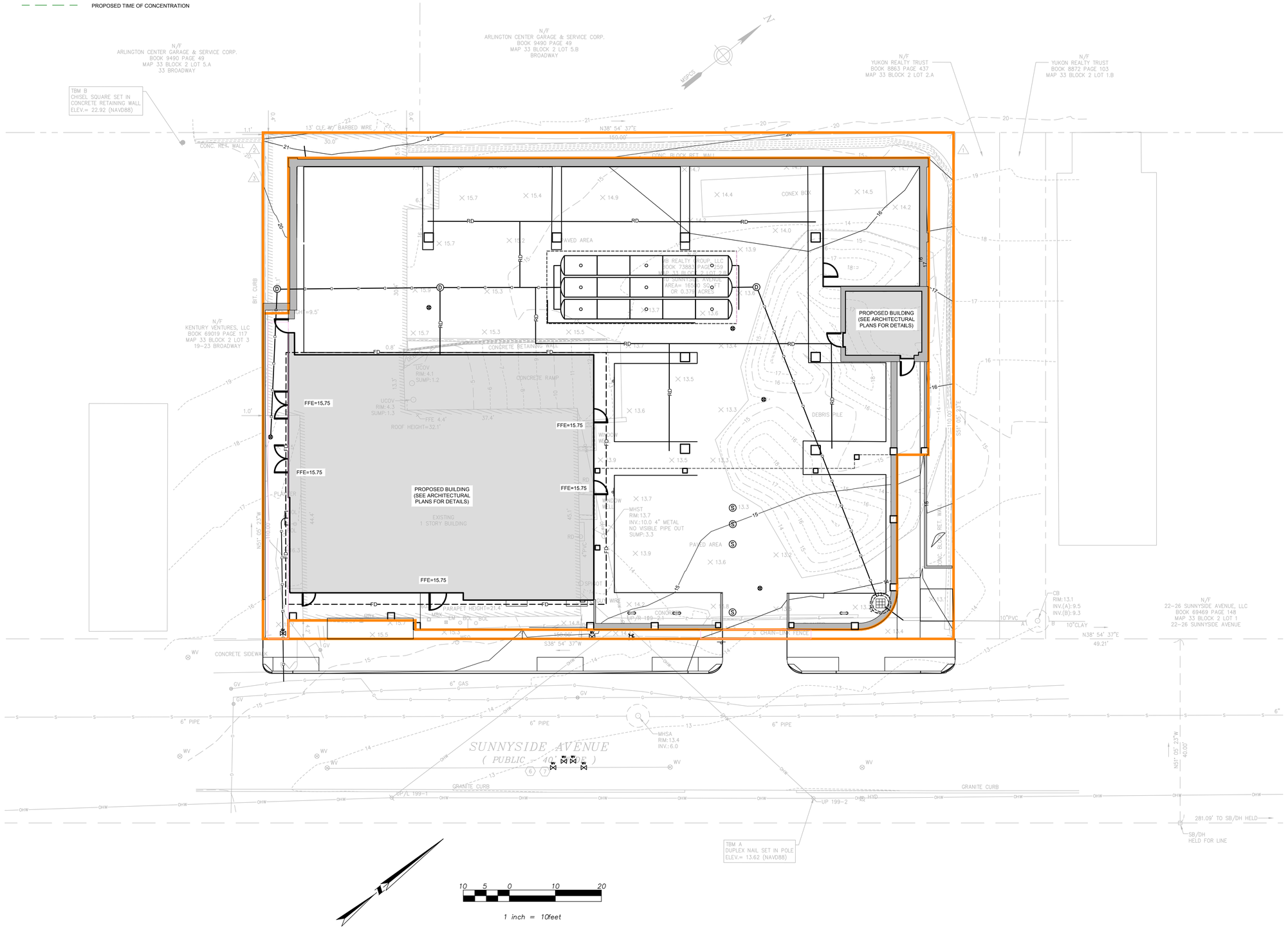
Open Space

- Conservation
- Recreation
- Recreation and Conservation
- Agriculture
- Habitat
- Historical/Cultural
- Scenic (Official Designation Only)
- Water Supply
- Flood Control
- Underwater
- Other
- Unknown

LEGEND:

PROPOSED WATERSHED

PROPOSED TIME OF CONCENTRATION



10 Sunnyside Avenue

PROJECT

Housing Corporation of Arlington

OWNER

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200 F 617 423.1414
utiledesign.com

ARCHITECT

samiotes
Samiotes Consultants Inc.
Civil Engineers + Land Surveyors
20 A Street
Framingham, MA 01701
T 508.877.6688
F 508.877.8349
www.samiotes.com

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SCALE
1" = 10' Arlington, MA

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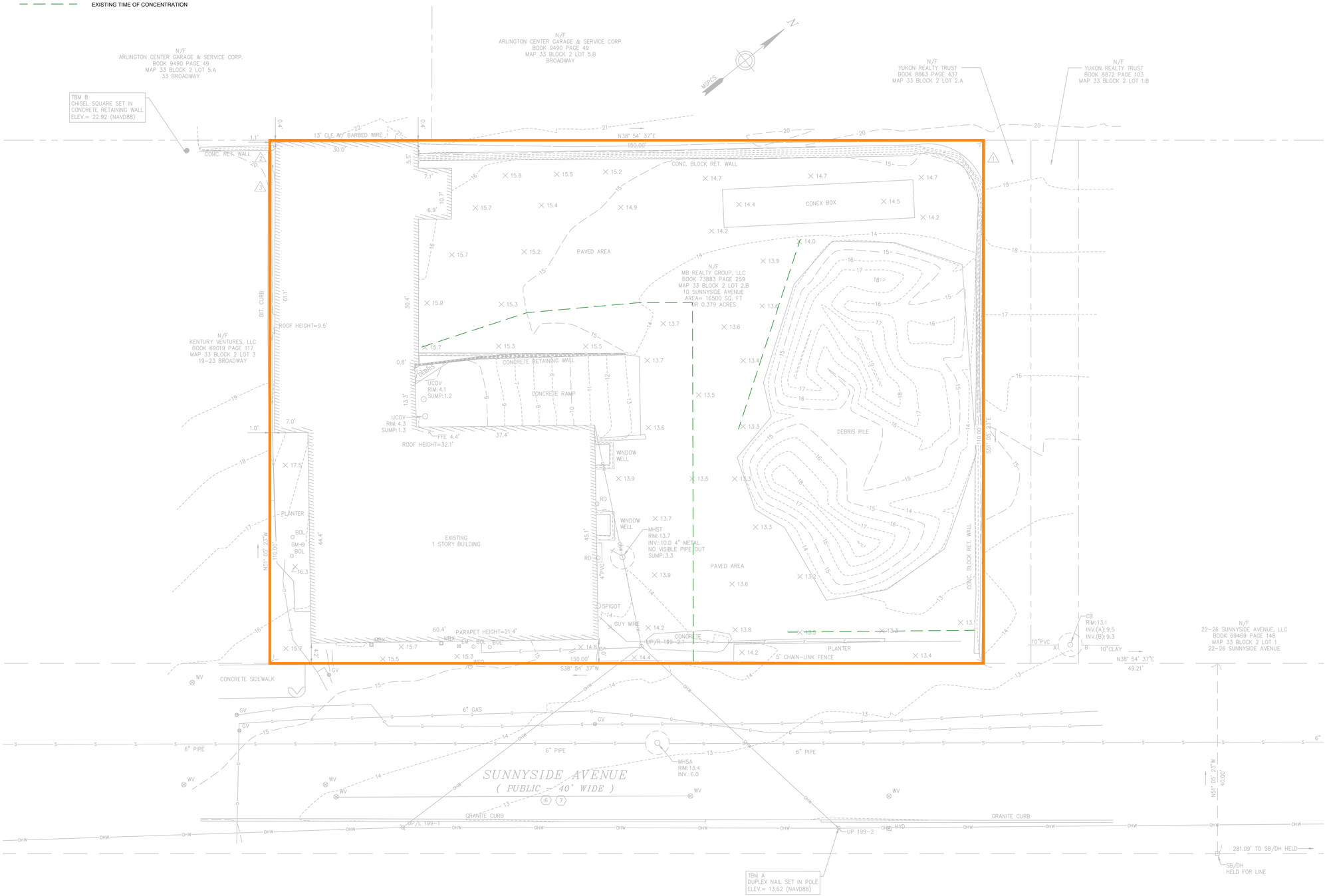

10 Sunnyside Avenue

PROJECT

Housing Corporation of Arlington

OWNER

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200 F 617 423.1414
utiledesign.com

ARCHITECT

samiotes
Samiotes Consultants Inc.
Civil Engineers + Land Surveyors
20 A Street
Framingham, MA 01701
T 508.877.6688
F 508.877.8349
www.samiotes.com

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EXISTING WATERSHED MAP

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Nitsch Engineering

Supplemental Traffic Impact Study

10 Sunnyside Avenue
Arlington, MA

December 8, 2022

Prepared for:

Housing Corporation of Arlington
252 Massachusetts Avenue
Arlington, MA 02474

Submitted by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Engineering Project #15289.

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1 Executive Summary

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts. The new development will comprise 43 low-income rental units with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

1.1 Trip Generation

The proposed development is anticipated to generate 207 daily trips, 15 weekday morning peak hour trips, and 20 weekday afternoon peak hour trips. Per the traffic volume data collected at the study area intersections, this does not represent a substantial increase in trips, during both the weekday morning and evening peak hours.

1.2 Parking

The Town of Arlington Parking Bylaws require one space per five units of affordable housing. The calculated parking demand for 40 units of affordable housing is 9 spaces. The 22 parking spaces exceeds the minimum nine spaces required by the Town of Arlington Parking Bylaws.

1.3 Analysis and Recommendations

We performed a vehicle capacity analysis to compare the weekday morning and weekday evening peak hours of the 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions for the study intersections. Under all conditions, the intersection of Alewife Brook Parkway and Broadway will operate poorly with most of the movements operating at LOS F. However, all movements for the study intersections in Build condition will continue to operate at the same levels of service as No-Build conditions with only minor increases in delay and queuing. The proposed new intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A for all movements.

As the project is not anticipated to have a significant impact to traffic operations at the study intersections, no mitigation is recommended at this time.

2 Introduction

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts. The new development will comprise 43 low-income rental units with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

This TIS will review existing roadway conditions, crash data, and traffic volumes, and it will analyze existing and future conditions at intersections in the study area to establish the impact the proposed development would have on traffic operations.

Figure 1 shows the Locus Map and Figure 2 shows the study area intersections.

2.1 Existing Site and Proposed Development

The project site, comprising approximately 16,500 square feet of land area, was previously occupied by an approximate 5,400-square-foot Automotive Center with an unstriped surface parking lot. The site is bounded by a commercial property to the north, an adult use marijuana dispensary to the south, Sunnyside Avenue to the east, and a commercial parking lot to the west.

The proponent proposes to modify and expand the existing site to develop 43 low-income residential units on site with approximately 22 parking spaces. Access to the site will remain as existing; one curb cut off Sunnyside Avenue.

2.2 Study Area

The study area includes the existing main three roadways, and three intersections within and adjacent to the project site.

Roadways

- Alewife Brook Parkway (Route 16)
- Broadway
- Sunnyside Avenue

Intersections

- Alewife Brook Parkway (Route 16) and Broadway (Signalized)
- Sunnyside Avenue and Broadway (Unsignalized)
- Sunnyside Avenue and Site Driveway (Unsignalized)

Figure 1: Locus Map
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

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Figure 2: Study Area Intersections
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

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2.3 Methodology

The traffic analysis herein is summarized in the following sections:

1. An inventory of existing transportation conditions, including roadway capacities, parking, transit, pedestrian and bicycle circulation, and site conditions.
2. An evaluation of future transportation conditions and an assessment of potential traffic impacts associated with the Project and other neighboring projects. Long-term impacts are evaluated for the year 2029, based on a seven-year horizon from the 2022 base year. Expected roadway conditions and deficiencies are identified. This section includes the following scenarios:
    a. The No-Build Scenario (2029) includes general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the Project site; and
    b. The Build Scenario (2029) includes specific travel demand forecasts for the Project.

3 Existing Conditions

3.1 Roadways

Alewife Brook Parkway (Route 16)

Alewife Brook Parkway is classified as an Urban Principal Arterial under Department of Conservation and Recreation (DCR) jurisdiction. It runs in an approximate north-west direction and spans approximately 2.0 miles from its northern terminus at Mystic Valley Parkway to its southern terminus at Concord Avenue. Within the study area, Alewife Brook Parkway is approximately 38 feet wide and is a two-way, four-lane roadway carrying two lanes of travel in each direction. Parking is prohibited on both sides of the roadway along its entire length. Along the west side of the roadway from Mystic Valley Parkway to Massachusetts Avenue, there is a separated multi-use path. On the west side of the roadway, the Alewife Greenway Bikeway runs parallel to the roadway from Mystic Valley Parkway to Concord Parkway. On the east side of the roadway, there is a separated shared-use path from Massachusetts Avenue to Woodstock Street and again from Broadway to Mystic Valley Parkway. The posted speed limit on Alewife Brook Parkway is 30 miles per hour (mph).

Broadway

Broadway is classified as an Urban Principal Arterial under local jurisdiction. Broadway generally runs in an east-west direction and provides one travel lane in each direction. Within the study area, Broadway generally provides two 11- to 12-foot-wide travel lanes separated by a double-yellow centerline with no marked shoulders and parking provided intermittently along both sides. Sidewalks are provided along both sides of Broadway within the study area, with illumination provided by way of streetlights mounted on wood poles. The posted speed limit along Broadway is 25 mph. Land use within the study area consists of the Saint Paul's Cemetery and residential and commercial properties.

Sunnyside Avenue

Sunnyside Avenue is classified as a Local Access Roadway under local jurisdiction. Sunnyside Avenue generally runs in a north-south direction and provides one travel lane in each direction. Within the study area, Sunnyside Avenue provides an approximate 26-foot wide traveled-way with no marked centerline or shoulders provided and on-street parking permitted along both sides of the roadway. Sidewalks are provided along both sides of Sunnyside Avenue within the study area, with illumination provided by way of streetlights mounted on wood poles. A posted speed limit is not provided along Sunnyside Avenue and, as such, the statutory speed limit is 25 mph. Land use within the study area consists of residential and commercial properties.

3.2 Study Intersections

Alewife Brook Parkway (Route 16) and Broadway

The intersection of Alewife Brook Parkway (Route 16) and Broadway is a four-way, signalized intersection with Alewife Brook Parkway running north-south and Broadway running east-west. Both Alewife Brook Parkway approaches carry two approach lanes: one left-turn/through lane and one through/right-turn lane. Both Broadway approaches are striped as one left-turn/through/right-turn lane in each direction, but both act as two lanes: one left-turn/through lane and one through/right-turn lane. The Alewife Brook Parkway movements have their own phase, followed by an exclusive pedestrian phase, followed by the Broadway eastbound phase, and then the Broadway

westbound phase. There is a shared-use path on the north side of Alewife Brook Parkway at the intersection. Sidewalks are present at all approaches to the intersection and there are crosswalks present across all approaches.

Sunnyside Avenue and Broadway

The intersection of Sunnyside Avenue and Broadway is a three-way, unsignalized intersection with Broadway operating as a free movement through the intersection and Sunnyside Avenue under stop-control. Sunnyside Avenue runs north-south and Broadway runs east-west. Both the Sunnyside Avenue and Broadway approaches carry one approach lane. Note that the Broadway approach lanes are 22 feet wide and although are only striped as single lanes, they operate as two approach lanes to provide queuing storage for vehicles turning onto Sunnyside Avenue. Sidewalks are present at all approaches to the intersection however crosswalks are not present. Wheelchair ramps with detectable warning panels are provided at the northeast and northwest corners of the intersection.

Sunnyside Avenue and the Existing Site Driveway

The intersection of Sunnyside Avenue and the Site Driveway is a three-way, unsignalized intersection with Sunnyside Avenue operating as a free movement through the intersection. Sunnyside Avenue runs north-south and the Site Driveway runs east-west. Both the Sunnyside Avenue and Broadway approaches carry one approach lane. Sidewalks are present along both sides of Sunnyside Avenue.

3.3 Public Transportation

Public transportation services are provided within the study area by the Massachusetts Bay Transit Authority (MBTA) for Bus service. Within the study area, the MBTA operates the Route 87 – Clarendon Hill or Arlington Center - Lechmere Station. Route 87 stops at the Broadway/Sunnyside Avenue intersection; and provides a connection to Arlington Center, Clarendon Hill, Teele Square, Davis Station (MBTA Subway Red Line), Union Square, and Lechmere Station (MBTA Subway Green Line).

MBTA bus service operates Monday through Friday from approximately 5:07 AM to 1:40 AM, on Saturday from 5:15 AM to 1:35 AM, and on Sunday from 6:00 AM to 1:33 AM, with 30-minute-or-less headways on weekdays and Saturdays and 60-minute-or-less headways on Sundays. All MBTA buses are handicapped and wheelchair accessible.

4 Existing Traffic Conditions

4.1 Traffic Count Data

Turning Movement Count (TMC) Data

We retained Accurate Counts (AC) of North Reading, Massachusetts to collect traffic data within the study area, including both Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMCs).

ATR Data

AC collected ATR counts for a continuous 48-hour period on Broadway between Sunnyside Avenue and Alewife Brook Parkway from Wednesday, November 2 to Thursday, November 3, 2022. We summarize the seasonally adjusted ATR counts in Table 1. (Section 4.2 discusses seasonal adjustment.) The original ATR data is included in Appendix A.

Table 1 – Automatic Traffic Recorder (ATR) Summary

Location	Period	ADT[a]		Peak Hour Traffic			K Factor[e]
		Volumes (vpd)[b]	Directional Distribution[c]	Period	Volumes (vph)[d]	Directional Distribution[c]	
Broadway, east of Sunnyside Avenue	Weekday	8,807	56% EB	Morning	628	55% EB	0.07
				Afternoon	772	54% EB	0.09

[a]Average Daily Traffic; [b]Vehicles per day; [c]NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound; [d]Vehicles per hour; [e]Proportion of daily traffic

TMC Data

AC collected TMC data at the two study intersections on Thursday, November 3, 2022. TMC data was recorded from 7:00 AM to 9:00 AM to capture the weekday morning traffic peak hours and from 4:00 PM to 6:00 PM to capture the weekday afternoon traffic peak hours. The counts included passenger vehicles, heavy vehicles, bicycles, and pedestrians. The peak hours within the study area were established as 7:00 AM to 8:00 AM during the morning period, and 5:00 PM to 6:00 PM during the afternoon period. The TMC data is included in Appendix A.

4.2 Seasonal Adjustment

Nitsch Engineering used the MassDOT 2019 Weekday Seasonal Adjustment Factors to establish if the traffic counts needed to be seasonally adjusted. The composition of the study area falls within “Group U4-7 Urban Arterials.” Counts within Group U4-7 collected during the month of November experience a value that is approximately 1% higher than an average month. Therefore, no seasonal adjustment factors were applied.

Figure 3 through 5 shows the 2022 existing peak-hour vehicular traffic, pedestrian, and bicycle volumes at the study intersections in the form of turning movements.

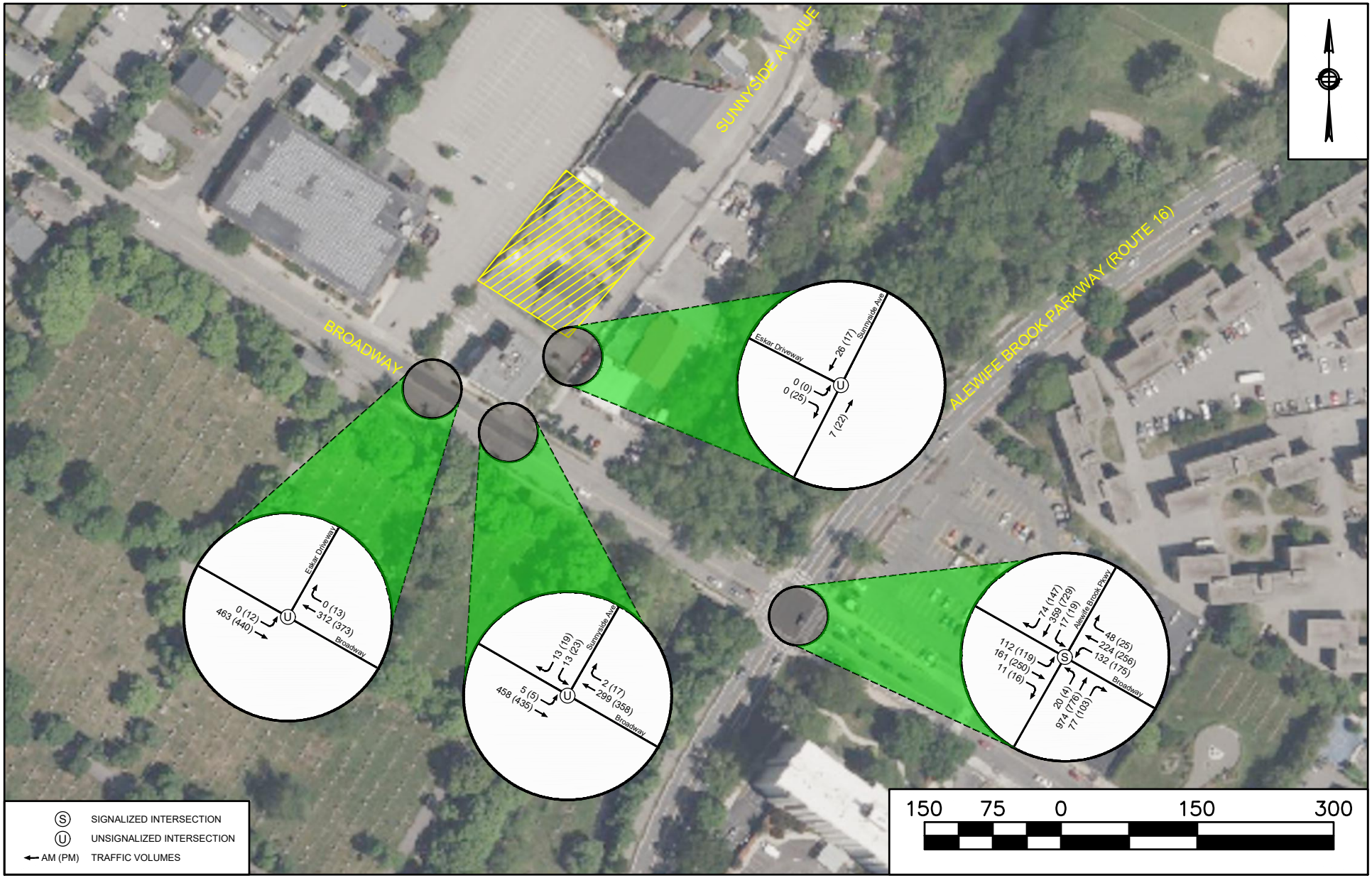

Figure 3: 2022 Existing Peak Hour Traffic Volumes
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

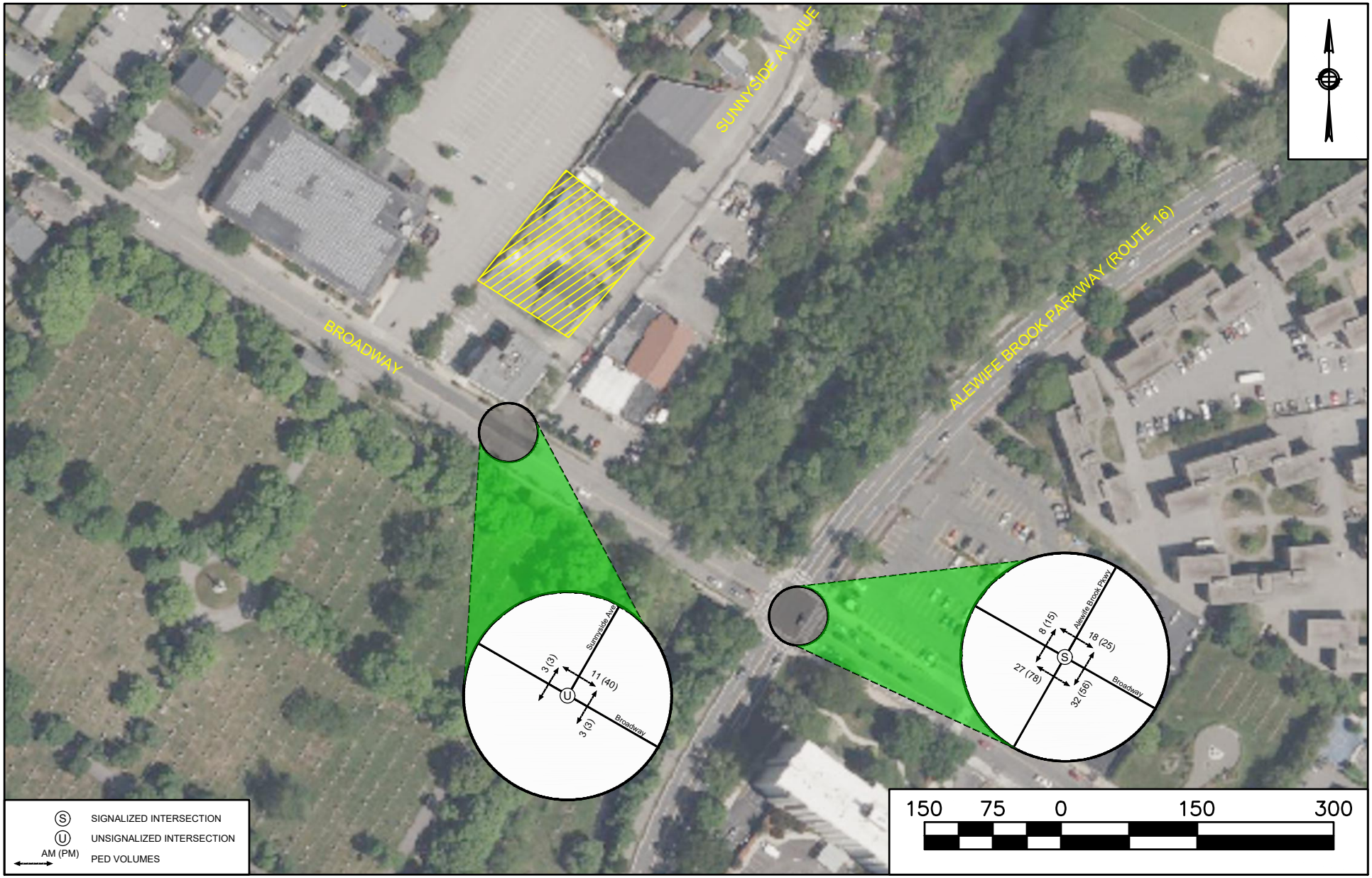

Figure 4: 2022 Existing Peak Hour Pedestrian Volumes
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

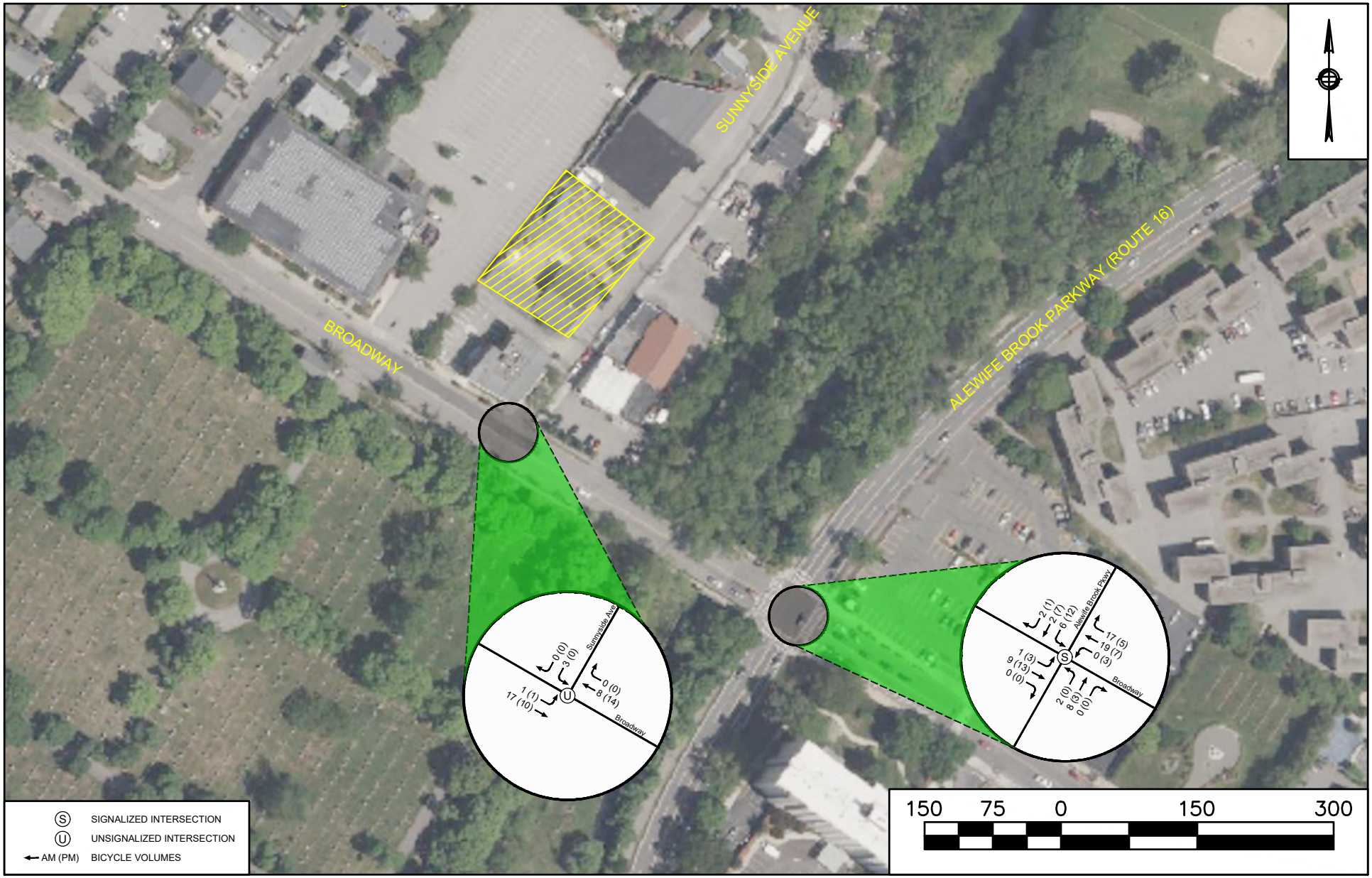

Figure 5: 2022 Existing Peak Hour Bicycle Volumes
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

5 Safety Analysis

5.1 Crash Data

We obtained crash data for the study intersections from MassDOT's IMPACT Crash Data Portal for the five most recent complete years of data, 2015 through 2019. Table 2 summarizes the crash statistics for the two study-area intersections.

Table 2 – Crash Statistics

Location	Number of Crashes			Severity				Manner of Collision					Percent During	
	Year	Total Crashes	Annual Average	PD[a]	PI[b]	NR[c]	F[d]	A[e]	RE[f]	SS[g]	Other[h]	Incl. Ped-Bike[j]	Peak Hours[k]	Wet/Icy Conditions
Sunnyside Avenue at Broadway	2015	2	0.4	2	0	0	0	1	1	0	0	0	100%	50%
	2016	0		0	0	0	0	0	0	0	0	0	0%	0%
	2017	0		0	0	0	0	0	0	0	0	0	0%	0%
	2018	0		0	0	0	0	0	0	0	0	0	0%	0%
	2019	0		0	0	0	0	0	0	0	0	0	0%	0%
	TOTAL	***2***		***2***	***0***	***0***	***0***	***1***	***1***	***0***	***0***	***0***	***100%***	***50%***
Broadway at Alewife Brook Parkway	2015	6	11.2	4	2	0	0	3	1	0	2	0	17%	33%
	2016	16		10	5	1	0	12	1	1	2	0	13%	13%
	2017	13		9	4	0	0	6	2	4	1	1	46%	15%
	2018	11		8	3	0	0	7	2	2	0	1	10%	0%
	2019	10		3	6	0	1	7	0	1	2	1	20%	0%
	TOTAL	***56***		***34***	***20***	***1***	***1***	***35***	***6***	***8***	***7***	***3***	***23%***	***11%***

[a]Property Damage Only; [b]Personal Injury Only (non-Fatal Injury); [c]Not Reported; [d]Fatality; [e]Angle; [f]Rear-end; [g]Sideswipe (same direction); [h]Sideswipe (opposite direction), Head-on, Single-Vehicle, Rear-to-Rear, Not Reported, Unknown, etc.; [j]Includes pedestrian or cyclist; [k]Occurred between 7-9am or 4-6pm

A total of 58 crashes were reported within the study area from 2015 to 2019. In terms of severity, 36 crashes reported property damage only, one crash had no severity reported, and another 20 crashes reported personal injury with one of them involving a fatality. Angle crashes were the most frequent type of crash with a total of 36 crashes, and of the remaining crashes, seven were rear-end, eight were sideswipes between vehicles traveling in the same direction, two were single-vehicle crashes, and five were head-on collisions. Three crashes involved pedestrians. 23% of all crashes in the study area occurred during peak hours, and 11% of all crashes occurred under wet conditions.

5.2 Intersection Crash Rates

The intersection crash rate is recognized as an effective tool to measure the safety of intersections. Crash rates for intersections are expressed by the number of crashes per million entering vehicles (MEV). Table 3 compares the crash rates for the study intersections with the Statewide and MassDOT District averages, as appropriate. The intersection crash rate calculations are included in Appendix D.

Table 3 – Crash Rate Summary

Location	Facility Type	Number of Crashes[a]	Crash Rate[b]	Average Rates[b,c]		Comparison to Average Rates	
				District 4	Statewide	District 4	Statewide
Sunnyside Avenue at Broadway	Unsignalized Intersection	2	0.10	0.57	0.57	Below	Below
Broadway at Alewife Brook Parkway	Signalized Intersection	56	1.09	0.73	0.78	Above	Above

[a] Based on 5-year crash history from MassDOT, 2014-2018
[b] Crashes per million entering vehicles (MEV),
[c] Based on the full set of MassDOT crash database entries as queried June 2018

Based on Tables 2 and 3, the intersection of Alewife Brook Parkway and Broadway experienced a high frequency of crashes over the five-year review period with a total of 56 crashes reported at the intersection, averaging 11.2 crashes per year. The intersection was found to have a motor vehicle crash rate of 1.09 crashes per MEV, which is above both the Statewide average and the MassDOT District 4 average, where the Project is located. In addition, the Highway Safety Improvement Program (HSIP) database was reviewed. The intersection of Alewife Brook Parkway and Broadway is listed as a HSIP cluster in the most recent (2015-2017) HSIP cluster listing.

The crash rate at the intersection of Sunnyside Avenue at Broadway is well below both the MassDOT District 4 and Statewide averages.

6 Sight Distance

Stopping Sight Distance (SSD) is the length of the roadway ahead that is visible to the driver and should be long enough to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance needed to stop the vehicle from the instant brake application begins.

Intersection Sight Distance (ISD) is the length of the leg of the departure sight triangle along the major road in both directions for a vehicle stopped on the minor road waiting to depart. The critical departure sight triangles for the proposed site driveway are for traffic approaching from either the left or right for left turns from driveway onto Sunnyside Avenue. The SSD and ISD values associated with a given design speed are shown in Table 4.

Table 4 – Sight Distance Criteria

DESIGN SPEED (MPH)	DESIGN STOPPING SIGHT DISTANCE VALUE[1] (FT)	RECOMMENDED INTERSECTION SIGHT DISTANCE VALUE[2] (FT)
15	80	170
20	115	225
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720
70	730	775
75	820	830
80	910	885
Source: *A Policy on Geometric Design of Highways and Streets, AASHTO, Washington DC (2011)*		
[1]Design value based on a grade of less than 3%, a brake reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 ft/s^2		
[2]Recommended value based on Case B1 - a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less		

Using the statutory speed limit of 25 MPH for Sunnyside Avenue, we calculated the required sight distance at the Site Driveway. As shown in Table 5, both SSD and ISD values at the Site Driveway are sufficient to meet current traffic engineering standards.

Table 5 – Sight Distance Evaluation

Intersecting Street	Stopping Sight Distance (SSD)			Intersection Sight Distance (ISD)		
	Traveling	Calculated	Measured	Looking	Calculated	Measured
Site Driveway at Sunnyside Avenue	NB	155	180	Right	280	210[a]
	SB	155	310	Left	280	280
[a]Clear line of sight provided to Broadway						

7 Future No-Build Traffic Conditions

Nitsch Engineering used the 2022 existing traffic volumes as the baseline for projecting traffic volumes to future 2029 No-Build conditions. To determine future 2029 conditions, the following steps are included:

- Project existing 2022 traffic volumes seven years in the future to the horizon year (2029) using an annual background traffic growth factor to account for regional growth;
- Add traffic volumes associated with any planned developments that may impact the study area;
- Include any planned roadway improvements that may affect traffic volumes; and
- Analyze the study area location to determine future traffic operations.

7.1 Background Growth

We reviewed the Town of Arlington's 2015 Master Plan to determine an appropriate growth rate to apply to the 2022 existing traffic volumes. As noted in Table 2.1 in Chapter 2 of the Master Plan, the expected growth from 2020 to 2030 is 3.3%, which equates to an annual 0.33% background growth rate. Understanding that development is increasing in the Greater Boston Area, we selected a conservative rate of 2.0% per year to represent regional background growth of traffic, as well as accounting for any additional development in this area. We applied this growth rate over the 7-year design period for the turning movement data.

7.2 2029 No-Build Traffic Volumes

We developed the 2029 No-Build volumes by applying annual growth rates for seven years to the 2022 Existing conditions volumes turning movements at the three study intersections. Figure 6 presents the peak hour traffic volumes for 2029 No-Build conditions.

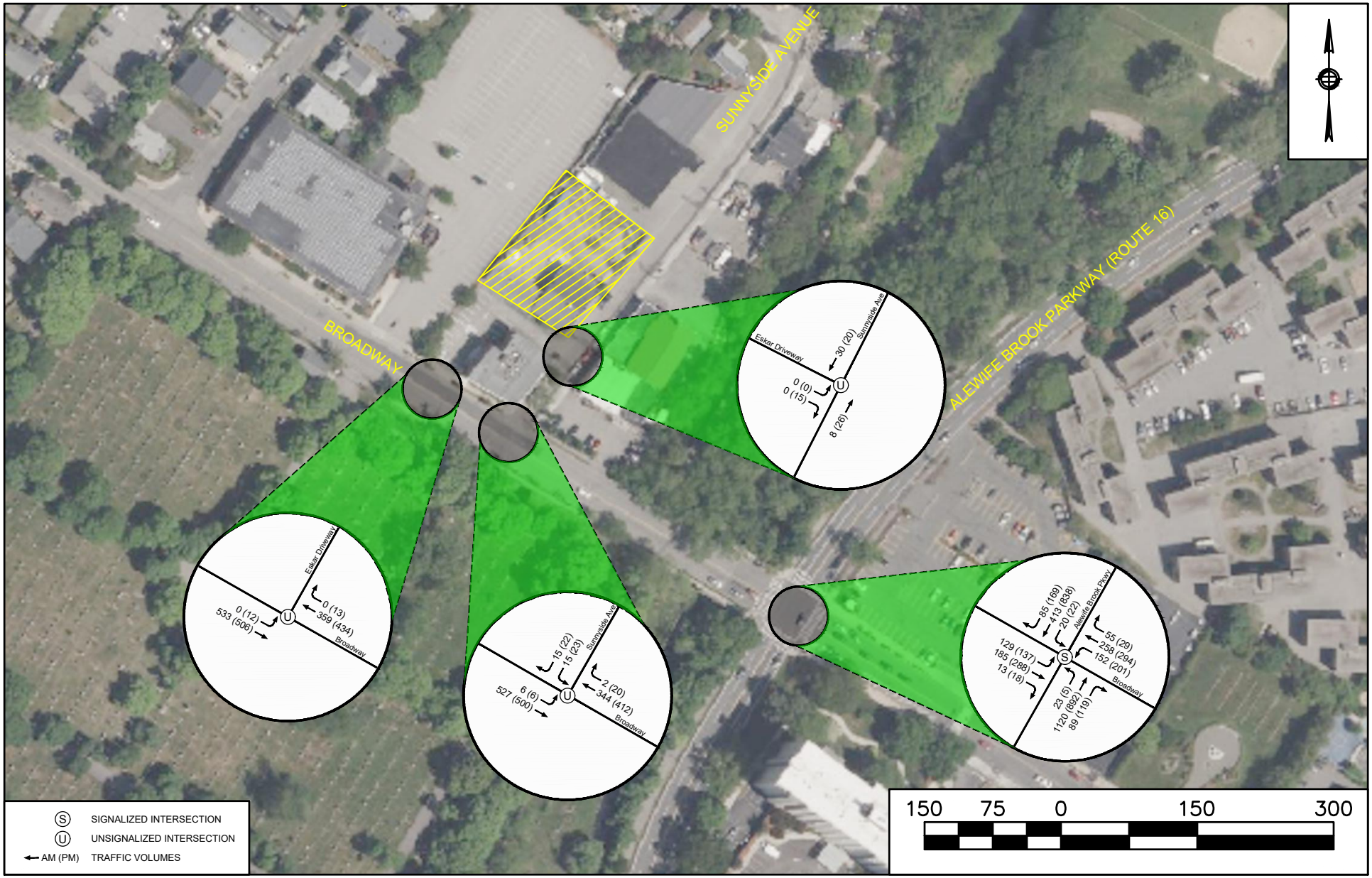

Figure 6: 2029 No-Build Peak Hour Traffic Volumes
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

8 Future Build Conditions

8.1 Proposed Site Changes

The proponent proposes to modify and expand the existing site to develop 43 low-income residential units on site with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

Access to the site will remain as existing; one curb cut off Sunnyside Avenue.

8.2 2029 Build Traffic Volumes

The 2029 Build traffic volumes comprise the 2029 No-Build volumes and the vehicle trips generated by the proposed development. The individual turning movements were applied to the study intersections.

8.2.1 Proposed Trip Generation

We estimated the trip generation for the proposed land use to obtain the trips generated by the proposed Project using the Institute of Transportation Engineers (ITE) *Trip Generation, 11th Edition.*[1] For the new affordable housing complex, we used LUC 223 – "Affordable Housing", which includes all multifamily housing that is rented at below market rate to households that include at least one employed member. Eligibility to live in affordable housing can be a function of limited household income and resident age. As the existing land use did not generate any trips during the count periods, a trip generation credit was not applied. The total future trips are shown in Table 6.

Table 6 – Peak Hour Trip Generation

Period	Direction	Future Peak Hour Trips
		Apartment Trips
Weekday	Enter	103
	Exit	104
	Total	**207**
Weekday morning	Enter	4
	Exit	11
	Total	**15**
Weekday evening	Enter	**12**
	Exit	**8**
	Total	**20**

Detailed trip generation calculations are provided in Appendix C.

8.2.2 Project Trip Distribution and Assignment

The traffic volume to and from the proposed development site will be distributed and assigned for the weekday morning and weekday evening peak hours based on the existing travel patterns and logical travel routes, which

[1] *Trip Generation*, Institute of Transportation Engineers, 11th Edition, 2021, Washington, D.C.

are based on the existing roadway network both within the Town and the surrounding region. The Trip Distribution percentages specific to the development are shown in Figure 7.

To distribute the site generated traffic volume through the roadway network, the volumes in Table 6 were multiplied by the trip distribution percentages assigned to the intersection volumes. The site-generated traffic volumes are shown on Figure 8 for the weekday morning and weekday evening peak hours.

The Build Condition traffic volumes were calculated by combining the No-Build traffic volumes with the site-generated traffic volumes, which are shown on Figure 9.

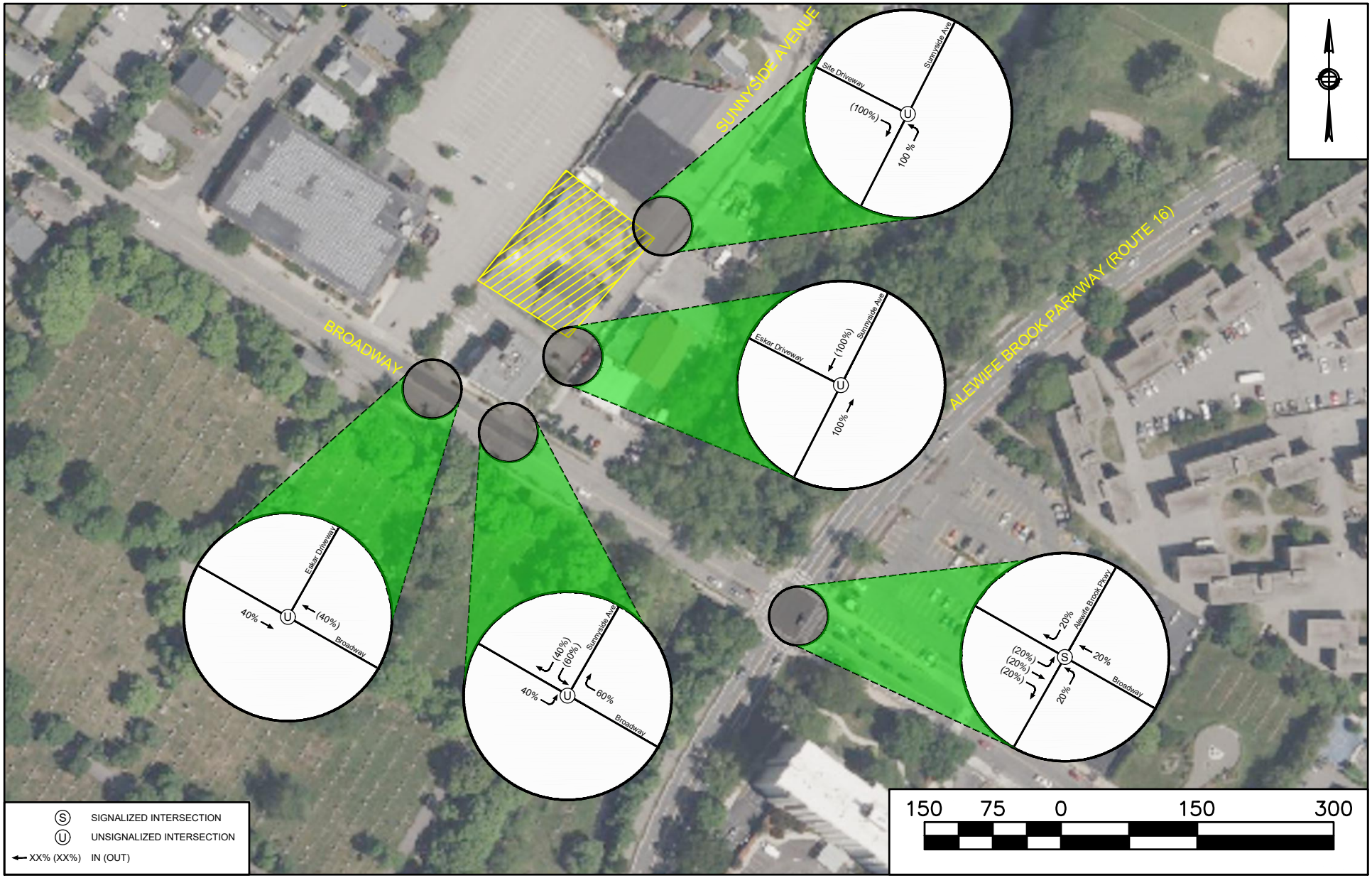

Figure 7: Site Generated Trip Distribution
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

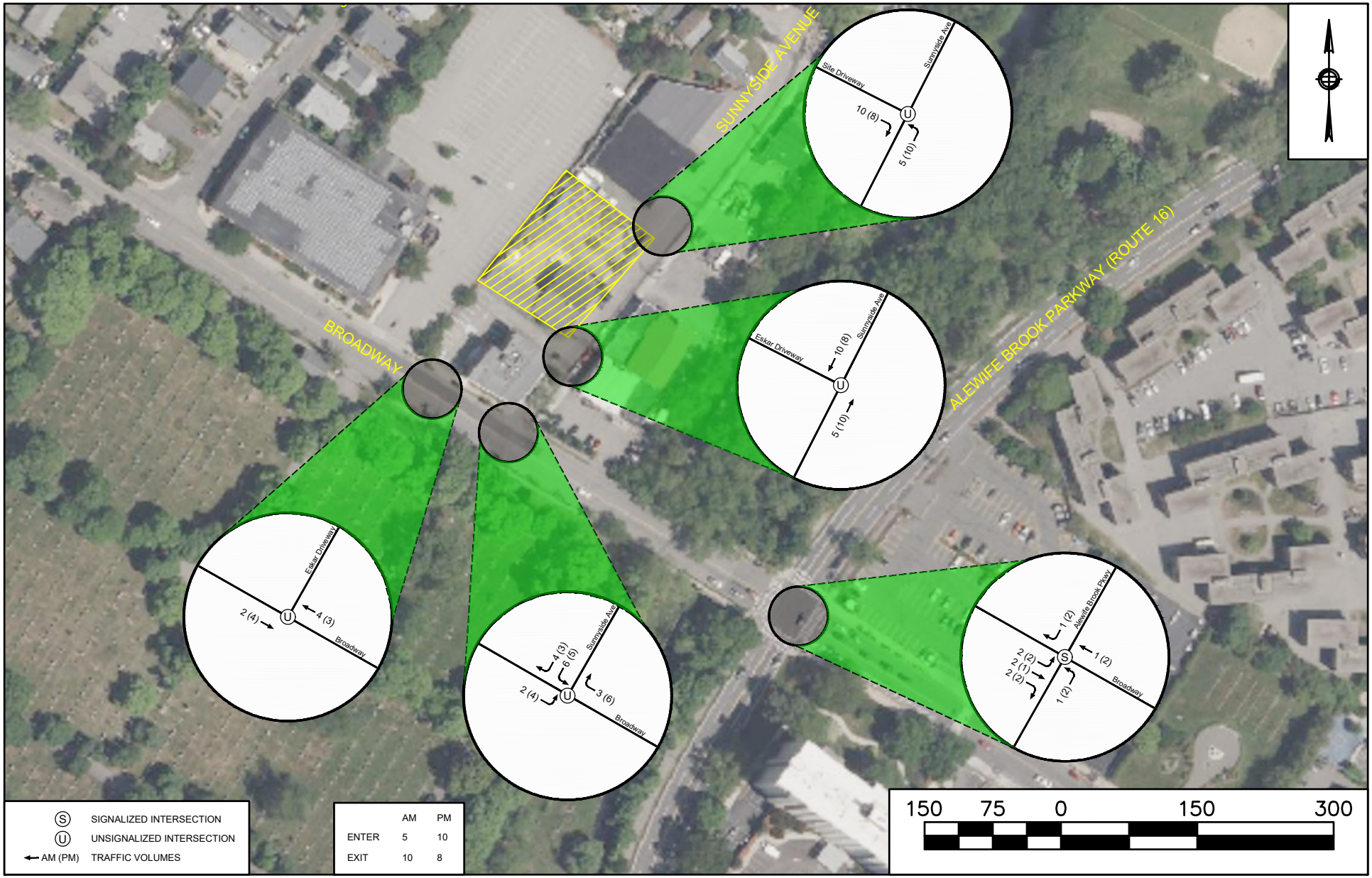

Figure 8: Site Generated Trip Assignment
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

Nitsch Engineering

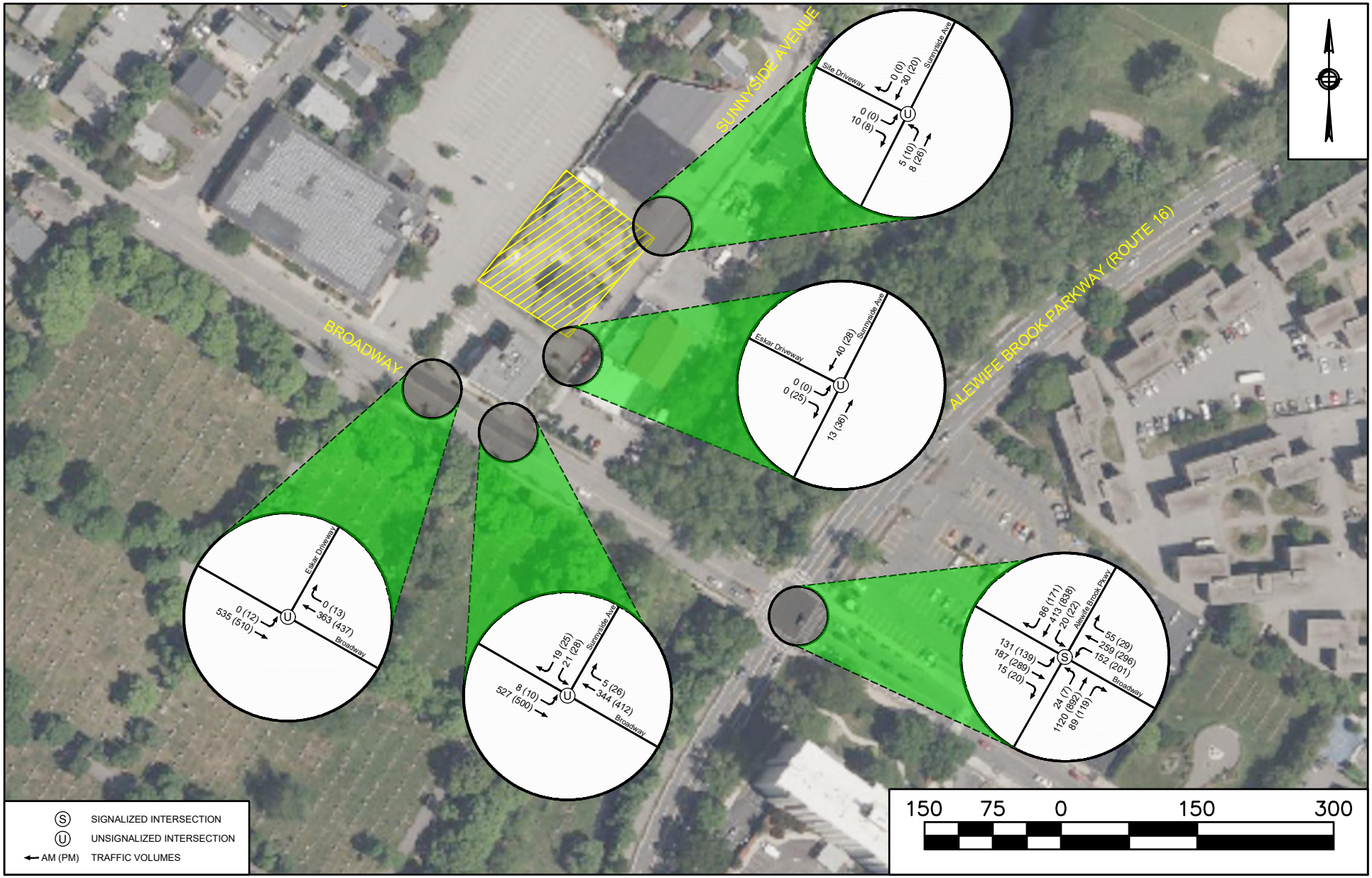

Figure 9: 2029 Build Peak Hour Traffic Volumes
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

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9 Parking Generation and Adequacy

Nitsch Engineering reviewed the Town of Arlington Zoning Bylaws to determine the required number of parking spaces for the development and assess adequacy of the proposed spaces.

The Town of Arlington Parking Bylaws requires a minimum of one space per five units of affordable housing. The calculated parking demand for 43 units of an affordable housing is 9 spaces.

Therefore, the proposed 22 parking spaces exceeds the minimum nine spaces required by the Town of Arlington Parking Bylaws.

10 Traffic Operations

10.1 Evaluation Criteria

Traffic operations at intersections are evaluated using the performance measures of average vehicular delay, level of service (LOS), volume-to-capacity (v/c) ratio, and average and 95th percentile queue lengths.

LOS is a qualitative measure that describes operating conditions through letter designations, from A to F. It is defined for intersections in terms of average control delay per vehicle. LOS A indicates the most favorable condition, with minimum traffic delay. LOS F represents the worst condition where there is significant traffic delay. LOS D or better is typically considered desirable for peak-hour operation in urban and suburban settings. The delay designations for each LOS level differ slightly between signalized and unsignalized intersections due to driver expectations and behavior. Table 7 summarizes the LOS criteria for intersections as used in this analysis.

Table 7 – Intersection Level of Service Criteria

Level of Service	Average Control Delay (sec/veh)	
	Signalized	Unsignalized
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50
Source: HCM 2000		

For signalized intersections, LOS is reported by lane group, by approach, and for the entire intersection. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. As such, an unsignalized intersection's LOS is generally reported for left-turns on the mainline and all side street movements, and an overall intersection LOS is not determined.

The v/c ratio is a measure of congestion at an intersection approach. The capacity of a facility is the maximum hourly rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions. A v/c ratio below one indicates that the

intersection approach has adequate capacity to serve the arriving traffic demand. A v/c ratio that approaches or exceeds 1.0 indicates traffic congestion or poor operating conditions. In that situation, vehicles arrive faster than they can be served, so queue lengths can theoretically grow indefinitely, which is the unstable condition.

Since arrival volumes fluctuate throughout the peak hour, queue lengths vary. The average (50th percentile) queue length represents the maximum back of queue on a typical cycle for a signalized intersection. Average queue lengths are not reported for unsignalized intersections. The 95th percentile queue, reported for both signalized and unsignalized intersections, occurs with 95th percentile traffic volumes, and its length commonly denotes the farthest extent of the vehicle queue.

10.2 Capacity Analyses

We performed capacity analyses for the study intersections under 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions during the weekday morning and weekday evening peak hours using Trafficware's Synchro 11 software. Synchro uses, in part, the traffic operational analysis methodology of the Transportation Research Board's *Highway Capacity Manual* (HCM).[2] We generated the results of the capacity analyses using Synchro's Percentile Delay Method for delay, v/c ratio, and queue lengths, supported by HCM 2000 methodology for unsignalized intersection analysis due to geometric incompatibility with HCM 6 methodology. The Synchro output sheets for the capacity analyses are included in Appendix D.

10.2.1 2022 Existing Conditions Capacity Analysis

The first analysis evaluated traffic operations with 2022 existing traffic volumes under existing geometric conditions and signal timing/phasing. We derived peak hour factors (PHFs) and heavy vehicle percentages from the TMC data. We applied both PHFs and the heavy vehicle percentages by lane group. Table 8 summarizes the capacity analysis results for the 2022 Existing conditions.

[2] *Highway Capacity Manual 2000/2010/2016 (HCM 2000/HCM 2010/HCM 6)*, Transportation Research Board, Washington, D.C., 2000-2016.

Table 8 – Capacity Analysis Summary: 2022 Existing Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d]		v/c Ratio[b]	Delay[c]	LOS	Queue[d]	
					50th	95th				50th	95th
Alewife Brook Pkwy (Rt 16) and Broadway *[signalized]*	Broadway EB – LTR	0.77	62.0	E	154	166	0.80	63.1	E	182	242
	Broadway WB – LTR	1.00	90.2	F	227	#284	1.16	139.2	F	~317	#318
	Route 16 NB – LTR	1.06	80.2	F	~601	#737	0.91	48.1	D	449	471
	Route 16 SB – LTR	0.63	35.0	D	191	233	1.02	72.7	E	~448	#613
	Overall	***1.06***	***70.4***	***E***	***-***	***-***	***1.16***	***75.7***	***E***	***-***	***-***
Sunnyside Ave and Broadway *[unsignalized]*	Broadway EB – LT	0.01	0.3	A	-	1	0.01	0.3	A	-	1
	Broadway WB – TR	0.20	0.0	A	-	0	0.26	0.0	A	-	0
	Sunnyside Ave SB – LR	0.10	14.2	B	-	8	0.22	18.7	C	-	20

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles
# 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

Under 2022 Existing conditions, the intersection of Alewife Brook Parkway and Broadway will operate at overall LOS E during both the weekday morning and weekday evening peak hours. Extensive queuing and high v/c ratios are calculated at most approaches to the Alewife Brook Parkway/Broadway intersection with some approaches exceeding 1.0 v/c ratio. At intersection of Sunnyside Avenue and Broadway, all approaches operate at LOS B or better during the weekday morning peak hours, and at LOS C or better during the evening peak hours.

10.2.2 2029 No-Build Conditions Capacity Analysis

Under future No-Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing. We applied the future volumes determined in Section 4.3 (Figure 3) with the same heavy vehicle percentages and PHFs as existing. Table 9 summarizes the analysis results for 2029 No-Build conditions.

Table 9 – Capacity Analysis Summary: 2029 No-Build Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Alewife Brook Pkwy (Rt 16) and Broadway *[signalized]*	Broadway EB – LTR	0.81	64.2	E	182	191	0.85	66.4	E	214	280
	Broadway WB – LTR	1.16	139.6	F	~317	#355	1.35	213.2	F	~416	#390
	Route 16 NB – LTR	1.28	166.5	F	~820	#932	1.13	106.5	F	~665	#653
	Route 16 SB – LTR	0.84	47.7	D	254	296	1.38	212.2	F	~664	#812
	Overall	***1.28***	***123.1***	***F***	***-***	***-***	***1.38***	***154.6***	***F***	***-***	***-***
Sunnyside Ave and Broadway *[unsignalized]*	Broadway EB – LT	0.01	0.3	A	-	1	0.01	0.4	A	-	1
	Broadway WB – TR	0.23	0.0	A	-	0	0.29	0.0	A	-	0
	Sunnyside Ave SB – LR	0.14	16.2	C	-	12	0.27	22.6	C	-	27

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles
# 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

Under 2029 No-Build conditions, all movements will experience an increase in v/c ratio, delay, and queue length. At the intersection of Alewife Brook Parkway and Broadway, the overall intersection will degrade from LOS E to F during both the weekday morning and evening peak hours. At the intersection of Sunnyside Avenue and Broadway, the Sunnyside Avenue southbound approach will degrade from LOS B to C during the weekday morning peak hour. All remaining approaches at the intersection will continue to operate at the same level of service as the Existing conditions during both the weekday morning and evening peak hours.

10.2.3 2029 Build Conditions Capacity Analysis

We performed capacity analyses for the proposed build conditions for the future development. Under these future Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing for all study intersections. We applied the future volumes determined in Section 8.2 (Figure 9) with the same heavy vehicle percentages and PHFs as existing. Table 10 summarizes the analysis results for the 2029 Build conditions.

Table 10 – Capacity Analysis Summary: 2029 Build Conditions

Location	Direction / Movement[a]	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th	v/c Ratio[b]	Delay[c]	LOS	Queue[d] 50th	Queue[d] 95th
Alewife Brook Pkwy (Rt 16) and Broadway *[signalized]*	Broadway EB – LTR	0.82	64.7	E	186	195	0.86	66.9	E	217	283
	Broadway WB – LTR	1.17	141.4	F	~320	#355	1.36	216.4	F	~421	#393
	Route 16 NB – LTR	1.30	174.6	F	~832	#940	1.19	131.5	F	~698	#681
	Route 16 SB – LTR	0.85	48.3	D	257	297	1.39	217.8	F	~672	#816
	Overall	***1.30***	***127.3***	***F***	***-***	***-***	***1.39***	***165.8***	***F***	***-***	***-***
Sunnyside Ave and Broadway *[unsignalized]*	Broadway EB – LT	0.02	0.3	A	-	1	0.01	0.3	A	-	1
	Broadway WB – TR	0.23	0.0	A	-	0	0.30	0.0	A	-	0
	Sunnyside Ave SB – LR	0.19	17.5	C	-	17	0.33	24.3	C	-	34
Sunnyside Ave and Site Driveway *[unsignalized]*	Site Driveway EB – LR	0.01	8.5	A	-	1	0.01	8.4	A	-	1
	Sunnyside Ave NB – LT	0.00	2.6	A	-	0	0.01	2.1	A	-	1
	Sunnyside Ave SB – TR	0.02	0.0	A	-	0	0.01	0.0	A	-	0

[a] Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound;
Movement: L = Left-turn, T = Through movement, R = Right-turn
[b] Overall v/c ratio is the maximum v/c ratio among lane groups
[c] Average vehicle delay (seconds)
[d] 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet
~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles
# 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles

Under 2029 Build conditions, all movements will continue to operate at No-Build conditions levels for the two existing intersections. All movements at the intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A.

11 Conclusions and Recommendations

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts.

We studied three intersections, one signalized and two unsignalized, to establish the impact the development would have on intersection traffic operations.

The crash data over the last five years available from MassDOT indicate that intersection of Alewife Brook Parkway and Broadway was found to have a motor vehicle crash rate above the MassDOT average for the District in which the Project is located (District 4). The Highway Safety Improvement Program (HSIP) database was reviewed. The intersection of Alewife Brook Parkway and Broadway is listed as one of the top 200 Crash Clusters in the most recent (2017-2019) HSIP cluster listing. The Broadway at Sunnyside Avenue intersection is not listed as a HSIP location and has a crash rate below the MassDOT average.

We collected turning movement counts at the three study intersections. For future conditions, we projected the Existing conditions traffic volumes over a seven-year period to the horizon year 2029 using an annual growth rate of 2.0% based on expected regional growth to become our future No-Build conditions volumes. We estimated the quantity of vehicle trips the proposed development would generate based on Institute of Transportation Engineers (ITE) *Trip Generation, 10th Edition* criteria.

We performed a vehicle capacity analysis to compare the weekday morning and weekday evening peak hours of the 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions for each of the three study intersections. Under all conditions, the intersection of Alewife Brook Parkway and Broadway will operate poorly with most of the movements operating at LOS F. However, all movements for both intersections in Build condition will continue to operate at No-Build conditions with only minor increases in delay and queuing. The intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A for all movements.

As the project is not anticipated to have a significant impact to traffic operations at the study intersections, no mitigation is recommended at this time.

APPENDIX CONTENTS

Appendix A: Traffic Count Data

LENGTH DATA ANALYSIS

Location

Broadway
East of Sunnyside Avenue
Latitude: 0.000000
Longitude: 0.000000

Analysis Time Period

Start	End
11/2/2022	11/3/2022
12:00 AM	11:59 PM

Vehicles Analyzed

17,544

Motorcycles

Motorcycles
Volume: 416
Pct of Total: 2.4%
Average Speed: 15 MPH

Passenger Cars

Passenger Cars
Volume: 10,340
Pct of Total: 58.9%
Average Speed: 20 MPH

Light Trucks and Vans

Light Trucks and Vans
Volume: 4,349
Pct of Total: 24.8%
Average Speed: 20 MPH

Single Unit Trucks

Single Unit Trucks
Volume: 1,910
Pct of Total: 10.9%
Average Speed: 17 MPH

Buses

Buses
Volume: 283
Pct of Total: 1.6%
Average Speed: 18 MPH

Multi Unit Trucks

Multi Unit Trucks
Volume: 246
Pct of Total: 1.4%
Average Speed: 15 MPH

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: WB,

11/2/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	2	0	5	2	3	6	1	0	1	0	0	20
1:00	0	0	0	0	1	0	1	6	3	0	0	0	0	0	11
2:00	0	0	0	0	0	0	2	2	2	0	0	0	0	0	6
3:00	0	0	0	0	0	0	0	5	2	2	0	0	0	0	9
4:00	0	0	1	0	1	0	0	2	4	3	0	0	0	0	11
5:00	0	0	0	0	0	1	3	14	18	2	1	0	0	0	39
6:00	0	0	0	1	0	5	23	27	24	16	2	0	1	0	99
7:00	0	0	0	0	6	12	29	73	94	51	11	6	1	0	283
8:00	0	0	3	0	4	15	41	91	77	38	18	4	0	0	291
9:00	0	0	0	1	13	10	36	68	41	27	7	0	0	0	203
10:00	0	0	4	2	18	25	42	51	41	4	3	0	0	0	190
11:00	0	0	3	5	12	16	65	54	38	4	1	0	0	0	198
12:00 PM	0	0	3	5	19	47	60	77	41	9	0	1	0	0	262
1:00	0	0	0	1	2	3	29	60	63	34	8	3	0	0	203
2:00	0	0	1	0	0	10	22	91	86	36	24	3	1	0	274
3:00	0	0	2	2	1	8	24	67	102	61	12	1	0	0	280
4:00	0	0	0	1	2	10	48	56	81	61	9	1	3	0	272
5:00	0	0	1	4	7	4	51	102	133	37	31	0	1	0	371
6:00	0	0	3	1	17	10	65	105	78	27	3	1	0	1	311
7:00	0	0	0	1	2	1	23	74	72	15	3	1	0	0	192
8:00	0	0	1	0	2	1	11	45	47	20	7	0	0	0	134
9:00	0	0	0	0	2	2	15	32	27	9	9	1	0	0	97
10:00	0	0	0	1	0	2	10	25	22	3	2	1	0	0	66
11:00	0	0	0	1	3	3	7	3	10	5	3	2	0	0	37
Total	0	0	22	28	112	190	609	1133	1112	465	154	26	7	1	3859

Percentile	15th	50th	85th	95th
Speed	19	24	27	30

Mean Speed (Average)	23.4
10 MPH Pace Speed	18-27
Number in Pace	3000
Percent in Pace	77.7%
Number > 24 MPH	1765
Percent > 24 MPH	45.7%

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: WB,

11/3/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	0	0	0	0	5	6	2	2	0	0	0	15
1:00	0	0	0	0	0	0	0	1	2	2	1	0	0	0	6
2:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
3:00	0	0	0	0	1	0	0	3	4	0	0	0	1	0	9
4:00	0	0	0	0	1	1	0	5	5	0	1	0	0	0	13
5:00	0	0	1	1	0	1	4	10	10	6	1	0	0	0	34
6:00	0	0	1	3	1	0	9	28	28	17	4	0	0	0	91
7:00	0	0	0	0	2	6	23	51	106	54	16	1	0	0	259
8:00	0	0	3	0	15	8	39	67	112	34	11	2	0	1	292
9:00	0	0	0	1	1	9	27	52	59	38	10	0	0	0	197
10:00	0	0	1	1	4	4	37	56	48	26	2	1	0	1	181
11:00	0	0	3	1	0	11	15	61	87	27	9	0	3	0	217
12:00 PM	0	0	0	1	1	4	16	66	75	24	12	1	0	0	200
1:00	0	0	1	1	2	3	37	63	75	38	16	2	0	0	238
2:00	0	0	0	0	4	2	24	56	96	60	7	5	1	1	256
3:00	0	0	1	4	4	5	32	76	142	41	5	0	1	0	311
4:00	0	0	0	0	1	2	33	73	93	75	14	2	0	0	293
5:00	0	0	1	1	6	10	50	123	105	53	18	0	0	1	368
6:00	0	0	1	4	20	21	86	102	65	32	6	0	0	0	337
7:00	0	0	4	3	0	8	25	67	69	19	3	1	0	1	200
8:00	0	0	0	1	3	6	13	36	50	29	6	2	0	0	146
9:00	0	0	0	1	2	3	19	25	31	11	7	0	0	0	99
10:00	0	0	0	0	1	1	7	28	24	8	6	2	2	0	79
11:00	0	0	0	0	0	0	2	5	2	1	1	1	0	0	12
Total	0	0	17	23	69	105	499	1060	1294	597	158	20	8	5	3855
			Percentile	15th	50th	85th	95th								
			Speed	20	24	28	30								
		Mean Speed (Average)		24.3											
		10 MPH Pace Speed		20-29											
		Number in Pace		3114											
		Percent in Pace		80.8%											
		Number > 24 MPH		2082											
		Percent > 24 MPH		54.0%											
Grand Total	0	0	39	51	181	295	1108	2193	2406	1062	312	46	15	6	7714
Stats			Percentile	15th	50th	85th	95th								
			Speed	11	20	26	29								
		Mean Speed (Average)		19.7											
		10 MPH Pace Speed		19-28											
		Number in Pace		6047											
		Percent in Pace		78.4%											
		Number > 24 MPH		4848											
		Percent > 24 MPH		27.8%											

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: EB,

11/2/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	2	7	0	2	5	2	1	1	0	1	1	22
1:00	0	0	0	0	0	0	1	0	3	1	0	0	0	0	5
2:00	0	0	0	0	0	2	3	0	2	2	0	0	0	0	9
3:00	0	0	0	0	2	0	1	1	3	1	1	0	0	0	9
4:00	0	0	0	1	0	0	3	2	6	3	2	0	0	1	18
5:00	0	0	1	1	3	6	9	10	7	2	4	1	1	1	46
6:00	0	0	26	20	23	20	38	32	23	10	4	1	0	2	199
7:00	0	0	67	65	77	45	43	18	19	4	5	0	0	2	345
8:00	0	0	89	87	90	33	20	3	3	1	1	0	0	1	328
9:00	0	0	54	54	81	48	52	32	19	6	1	2	0	2	351
10:00	0	0	21	23	59	38	33	35	16	9	3	1	0	0	238
11:00	0	0	38	45	71	55	55	25	9	5	0	0	0	0	303
12:00 PM	0	0	40	39	57	38	46	25	12	2	2	1	0	0	262
1:00	0	0	46	36	48	35	45	31	17	12	1	1	0	1	273
2:00	0	0	42	41	64	43	43	36	15	8	6	0	0	3	301
3:00	0	0	57	44	60	73	54	31	21	10	2	0	0	1	353
4:00	0	0	78	67	80	63	54	33	28	6	3	1	0	1	414
5:00	0	0	76	58	83	48	78	32	12	7	4	1	0	2	401
6:00	0	0	76	74	99	78	46	18	6	0	0	0	0	0	397
7:00	0	0	35	29	56	44	48	27	20	7	3	1	0	1	271
8:00	0	0	17	12	23	30	38	25	17	10	1	0	0	2	175
9:00	0	0	2	13	24	17	32	11	11	10	3	1	1	0	125
10:00	0	0	1	6	8	10	14	11	7	5	0	0	0	0	62
11:00	0	0	0	3	4	6	8	10	7	2	1	0	0	0	41
Total	0	0	766	720	1019	732	766	453	285	124	48	11	3	21	4948

Percentile	15th	50th	85th	95th
Speed	9	15	22	26

Mean Speed (Average)	16.3
10 MPH Pace Speed	11-20
Number in Pace	2755
Percent in Pace	55.7%
Number > 24 MPH	492
Percent > 24 MPH	9.9%

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: EB,

11/3/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	1	2	0	4	6	4	2	0	1	1	0	21
1:00	0	0	0	1	0	0	1	0	2	1	0	0	0	0	5
2:00	0	0	0	0	0	1	0	2	0	1	0	0	0	0	4
3:00	0	0	0	0	0	1	2	1	2	2	0	0	0	0	8
4:00	0	0	0	0	0	1	2	5	3	2	1	0	0	1	15
5:00	0	0	0	1	7	5	6	11	9	5	1	3	1	0	49
6:00	0	0	17	19	25	21	39	19	12	6	7	3	2	2	172
7:00	0	0	60	49	67	65	55	32	24	8	2	1	0	2	365
8:00	0	0	88	75	88	43	39	9	7	0	0	0	0	5	354
9:00	0	0	77	51	68	49	40	23	12	4	2	0	0	2	328
10:00	0	0	26	26	41	44	43	27	19	6	5	2	0	1	240
11:00	0	0	35	18	40	45	47	29	29	10	2	1	1	1	258
12:00 PM	0	0	32	38	50	34	38	27	25	7	9	2	1	0	263
1:00	0	0	43	37	51	36	53	25	18	12	7	2	0	3	287
2:00	0	0	40	28	45	49	53	31	20	10	0	4	0	1	281
3:00	0	0	47	42	86	68	52	29	21	10	5	0	0	0	360
4:00	0	0	65	49	81	71	74	23	15	6	0	0	0	0	384
5:00	0	0	89	80	86	53	45	18	16	4	1	0	0	2	394
6:00	0	0	74	67	82	54	53	22	5	2	2	0	0	0	361
7:00	0	0	33	25	61	33	49	29	18	3	2	0	1	0	254
8:00	0	0	11	22	39	30	28	23	14	4	0	1	0	0	172
9:00	0	0	3	15	27	15	32	18	9	5	1	1	0	1	127
10:00	0	0	2	3	24	12	17	13	6	7	1	1	0	1	87
11:00	0	0	0	1	5	2	4	2	0	2	0	0	1	0	17
Total	0	0	742	648	975	732	776	424	290	119	48	22	8	22	4806
			Percentile	15th	50th	85th	95th								
			Speed	9	15	22	26								
		Mean Speed (Average)		16.5											
		10 MPH Pace Speed		11-20											
		Number in Pace		2695											
		Percent in Pace		56.1%											
		Number > 24 MPH		509											
		Percent > 24 MPH		10.6%											
Grand Total	0	0	1508	1368	1994	1464	1542	877	575	243	96	33	11	43	9754
Stats			Percentile	15th	50th	85th	95th								
			Speed	9	15	22	26								
		Mean Speed (Average)		16.4											
		10 MPH Pace Speed		11-20											
		Number in Pace		5450											
		Percent in Pace		55.9%											
		Number > 24 MPH		1001											
		Percent > 24 MPH		10.3%											

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: Combined

11/2/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	4	7	5	4	8	8	2	1	1	1	1	42
1:00	0	0	0	0	1	0	2	6	6	1	0	0	0	0	16
2:00	0	0	0	0	0	2	5	2	4	2	0	0	0	0	15
3:00	0	0	0	0	2	0	1	6	5	3	1	0	0	0	18
4:00	0	0	1	1	1	0	3	4	10	6	2	0	0	1	29
5:00	0	0	1	1	3	7	12	24	25	4	5	1	1	1	85
6:00	0	0	26	21	23	25	61	59	47	26	6	1	1	2	298
7:00	0	0	67	65	83	57	72	91	113	55	16	6	1	2	628
8:00	0	0	92	87	94	48	61	94	80	39	19	4	0	1	619
9:00	0	0	54	55	94	58	88	100	60	33	8	2	0	2	554
10:00	0	0	25	25	77	63	75	86	57	13	6	1	0	0	428
11:00	0	0	41	50	83	71	120	79	47	9	1	0	0	0	501
12:00 PM	0	0	43	44	76	85	106	102	53	11	2	2	0	0	524
1:00	0	0	46	37	50	38	74	91	80	46	9	4	0	1	476
2:00	0	0	43	41	64	53	65	127	101	44	30	3	1	3	575
3:00	0	0	59	46	61	81	78	98	123	71	14	1	0	1	633
4:00	0	0	78	68	82	73	102	89	109	67	12	2	3	1	686
5:00	0	0	77	62	90	52	129	134	145	44	35	1	1	2	772
6:00	0	0	79	75	116	88	111	123	84	27	3	1	0	1	708
7:00	0	0	35	30	58	45	71	101	92	22	6	2	0	1	463
8:00	0	0	18	12	25	31	49	70	64	30	8	0	0	2	309
9:00	0	0	2	13	26	19	47	43	38	19	12	2	1	0	222
10:00	0	0	1	7	8	12	24	36	29	8	2	1	0	0	128
11:00	0	0	0	4	7	9	15	13	17	7	4	2	0	0	78
Total	0	0	788	748	1131	922	1375	1586	1397	589	202	37	10	22	8807

Percentile	15th	50th	85th	95th
Speed	11	20	25	29

Mean Speed (Average)	19.4
10 MPH Pace Speed	17-26
Number in Pace	4650
Percent in Pace	52.8%
Number > 24 MPH	2257
Percent > 24 MPH	25.6%

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: Combined

11/3/2022 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	Total
12:00 AM	0	0	0	1	2	0	4	11	10	4	2	1	1	0	36
1:00	0	0	0	1	0	0	1	1	4	3	1	0	0	0	11
2:00	0	0	0	0	0	1	1	3	0	1	0	0	0	0	6
3:00	0	0	0	0	1	1	2	4	6	2	0	0	1	0	17
4:00	0	0	0	0	1	2	2	10	8	2	2	0	0	1	28
5:00	0	0	1	2	7	6	10	21	19	11	2	3	1	0	83
6:00	0	0	18	22	26	21	48	47	40	23	11	3	2	2	263
7:00	0	0	60	49	69	71	78	83	130	62	18	2	0	2	624
8:00	0	0	91	75	103	51	78	76	119	34	11	2	0	6	646
9:00	0	0	77	52	69	58	67	75	71	42	12	0	0	2	525
10:00	0	0	27	27	45	48	80	83	67	32	7	3	0	2	421
11:00	0	0	38	19	40	56	62	90	116	37	11	1	4	1	475
12:00 PM	0	0	32	39	51	38	54	93	100	31	21	3	1	0	463
1:00	0	0	44	38	53	39	90	88	93	50	23	4	0	3	525
2:00	0	0	40	28	49	51	77	87	116	70	7	9	1	2	537
3:00	0	0	48	46	90	73	84	105	163	51	10	0	1	0	671
4:00	0	0	65	49	82	73	107	96	108	81	14	2	0	0	677
5:00	0	0	90	81	92	63	95	141	121	57	19	0	0	3	762
6:00	0	0	75	71	102	75	139	124	70	34	8	0	0	0	698
7:00	0	0	37	28	61	41	74	96	87	22	5	1	1	1	454
8:00	0	0	11	23	42	36	41	59	64	33	6	3	0	0	318
9:00	0	0	3	16	29	18	51	43	40	16	8	1	0	1	226
10:00	0	0	2	3	25	13	24	41	30	15	7	3	2	1	166
11:00	0	0	0	1	5	2	6	7	2	3	1	1	1	0	29
Total	0	0	759	671	1044	837	1275	1484	1584	716	206	42	16	27	8661
			Percentile	15th	50th	85th	95th								
			Speed	12	20	26	29								
		Mean Speed (Average)		19.9											
		10 MPH Pace Speed		17-26											
		Number in Pace		4597											
		Percent in Pace		53.1%											
		Number > 24 MPH		2591											
		Percent > 24 MPH		29.9%											
Grand Total	0	0	1547	1419	2175	1759	2650	3070	2981	1305	408	79	26	49	17468
Stats			Percentile	15th	50th	85th	95th								
			Speed	11	20	26	29								
		Mean Speed (Average)		19.7											
		10 MPH Pace Speed		17-26											
		Number in Pace		9247											
		Percent in Pace		52.9%											
		Number > 24 MPH		4848											
		Percent > 24 MPH		27.8%											

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA

11/2/2022	WB,		Hour Totals		EB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	7	71			3	64				
12:15	5	65			5	64				
12:30	5	66			8	70				
12:45	3	60	20	262	6	64	22	262	42	524
1:00	5	44			3	68				
1:15	4	56			0	78				
1:30	1	40			2	69				
1:45	1	63	11	203	0	58	5	273	16	476
2:00	0	70			5	69				
2:15	3	53			1	64				
2:30	1	71			0	79				
2:45	2	80	6	274	3	89	9	301	15	575
3:00	3	71			1	85				
3:15	3	60			2	97				
3:30	2	79			5	95				
3:45	1	70	9	280	1	76	9	353	18	633
4:00	2	63			0	104				
4:15	3	71			6	106				
4:30	3	73			9	104				
4:45	3	65	11	272	3	100	18	414	29	686
5:00	1	99			5	98				
5:15	6	102			10	105				
5:30	19	91			13	112				
5:45	13	79	39	371	18	86	46	401	85	772
6:00	13	83			37	111				
6:15	13	73			39	102				
6:30	36	81			53	104				
6:45	37	74	99	311	70	80	199	397	298	708
7:00	36	55			77	78				
7:15	56	56			83	78				
7:30	87	47			121	70				
7:45	104	34	283	192	64	45	345	271	628	463
8:00	76	38			84	47				
8:15	64	33			72	35				
8:30	93	33			96	44				
8:45	58	30	291	134	76	49	328	175	619	309
9:00	56	32			90	34				
9:15	55	29			95	32				
9:30	45	23			99	37				
9:45	47	13	203	97	67	22	351	125	554	222
10:00	32	21			59	22				
10:15	56	16			49	16				
10:30	42	16			69	13				
10:45	60	13	190	66	61	11	238	62	428	128
11:00	52	13			78	12				
11:15	50	11			71	15				
11:30	53	2			66	5				
11:45	43	11	198	37	88	9	303	41	501	78
Total	1360	2499			1873	3075			3233	5574
Percent	35.2%	64.8%			37.9%	62.1%			36.7%	63.3%

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA

11/3/2022	WB,		Hour Totals		EB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	6	56			5	44				
12:15	5	61			4	70				
12:30	1	35			7	86				
12:45	3	48	15	200	5	63	21	263	36	463
1:00	0	52			2	74				
1:15	3	61			2	76				
1:30	2	64			1	73				
1:45	1	61	6	238	0	64	5	287	11	525
2:00	0	54			1	56				
2:15	1	69			2	70				
2:30	0	70			1	83				
2:45	1	63	2	256	0	72	4	281	6	537
3:00	3	62			1	75				
3:15	3	87			2	100				
3:30	1	73			1	85				
3:45	2	89	9	311	4	100	8	360	17	671
4:00	1	69			2	97				
4:15	2	61			3	93				
4:30	4	83			2	98				
4:45	6	80	13	293	8	96	15	384	28	677
5:00	6	87			7	110				
5:15	5	87			10	83				
5:30	12	101			10	101				
5:45	11	93	34	368	22	100	49	394	83	762
6:00	14	83			34	84				
6:15	11	92			36	100				
6:30	27	99			46	83				
6:45	39	63	91	337	56	94	172	361	263	698
7:00	38	60			65	71				
7:15	53	55			99	58				
7:30	85	45			116	56				
7:45	83	40	259	200	85	69	365	254	624	454
8:00	77	42			91	41				
8:15	71	41			72	51				
8:30	80	39			92	38				
8:45	64	24	292	146	99	42	354	172	646	318
9:00	63	24			85	28				
9:15	51	30			77	40				
9:30	39	16			91	30				
9:45	44	29	197	99	75	29	328	127	525	226
10:00	43	16			63	24				
10:15	41	21			52	21				
10:30	43	24			57	24				
10:45	54	18	181	79	68	18	240	87	421	166
11:00	45	12			66	17				
11:15	57	*			65	*				
11:30	50	*			56	*				
11:45	65	*	217	12	71	*	258	17	475	29
Total	1316	2539			1819	2987			3135	5526
Percent	34.1%	65.9%			37.8%	62.2%			36.2%	63.8%
Grand Total	2676	5038			3692	6062			6368	11100
Percent	34.7%	65.3%			37.9%	62.1%			36.5%	63.5%
ADT		ADT: 8,772		AADT: 8,772						

Location : Broadway 15289001
Location : East of Sunnyside Avenue
City/State: Arlington, MA

10/31/2022	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,
12:00 AM	*	*	*	*	20	22	15	21	*	*	*	*	*	*	18	22
1:00	*	*	*	*	11	5	6	5	*	*	*	*	*	*	8	5
2:00	*	*	*	*	6	9	2	4	*	*	*	*	*	*	4	6
3:00	*	*	*	*	9	9	9	8	*	*	*	*	*	*	9	8
4:00	*	*	*	*	11	18	13	15	*	*	*	*	*	*	12	16
5:00	*	*	*	*	39	46	34	49	*	*	*	*	*	*	36	48
6:00	*	*	*	*	99	199	91	172	*	*	*	*	*	*	95	186
7:00	*	*	*	*	283	345	259	365	*	*	*	*	*	*	271	355
8:00	*	*	*	*	291	328	292	354	*	*	*	*	*	*	292	341
9:00	*	*	*	*	203	351	197	328	*	*	*	*	*	*	200	340
10:00	*	*	*	*	190	238	181	240	*	*	*	*	*	*	186	239
11:00	*	*	*	*	198	303	217	258	*	*	*	*	*	*	208	280
12:00 PM	*	*	*	*	262	262	200	263	*	*	*	*	*	*	231	262
1:00	*	*	*	*	203	273	238	287	*	*	*	*	*	*	220	280
2:00	*	*	*	*	274	301	256	281	*	*	*	*	*	*	265	291
3:00	*	*	*	*	280	353	311	360	*	*	*	*	*	*	296	356
4:00	*	*	*	*	272	414	293	384	*	*	*	*	*	*	282	399
5:00	*	*	*	*	371	401	368	394	*	*	*	*	*	*	370	398
6:00	*	*	*	*	311	397	337	361	*	*	*	*	*	*	324	379
7:00	*	*	*	*	192	271	200	254	*	*	*	*	*	*	196	262
8:00	*	*	*	*	134	175	146	172	*	*	*	*	*	*	140	174
9:00	*	*	*	*	97	125	99	127	*	*	*	*	*	*	98	126
10:00	*	*	*	*	66	62	79	87	*	*	*	*	*	*	72	74
11:00	*	*	*	*	37	41	12	17	*	*	*	*	*	*	24	29
Total	0	0	0	0	3859	4948	3855	4806	0	0	0	0	0	0	3857	4876
Day	0		0		8807		8661		0		0		0		8733	
AM Peak					8:00	9:00	8:00	7:00							8:00	7:00
Volume					291	351	292	365							292	355
PM Peak					5:00	4:00	5:00	5:00							5:00	4:00
Volume					371	414	368	394							370	399
Comb Total	0		0		8807		8661		0		0		0		8733	
ADT	ADT: 8,772		AADT: 8,772													

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 1

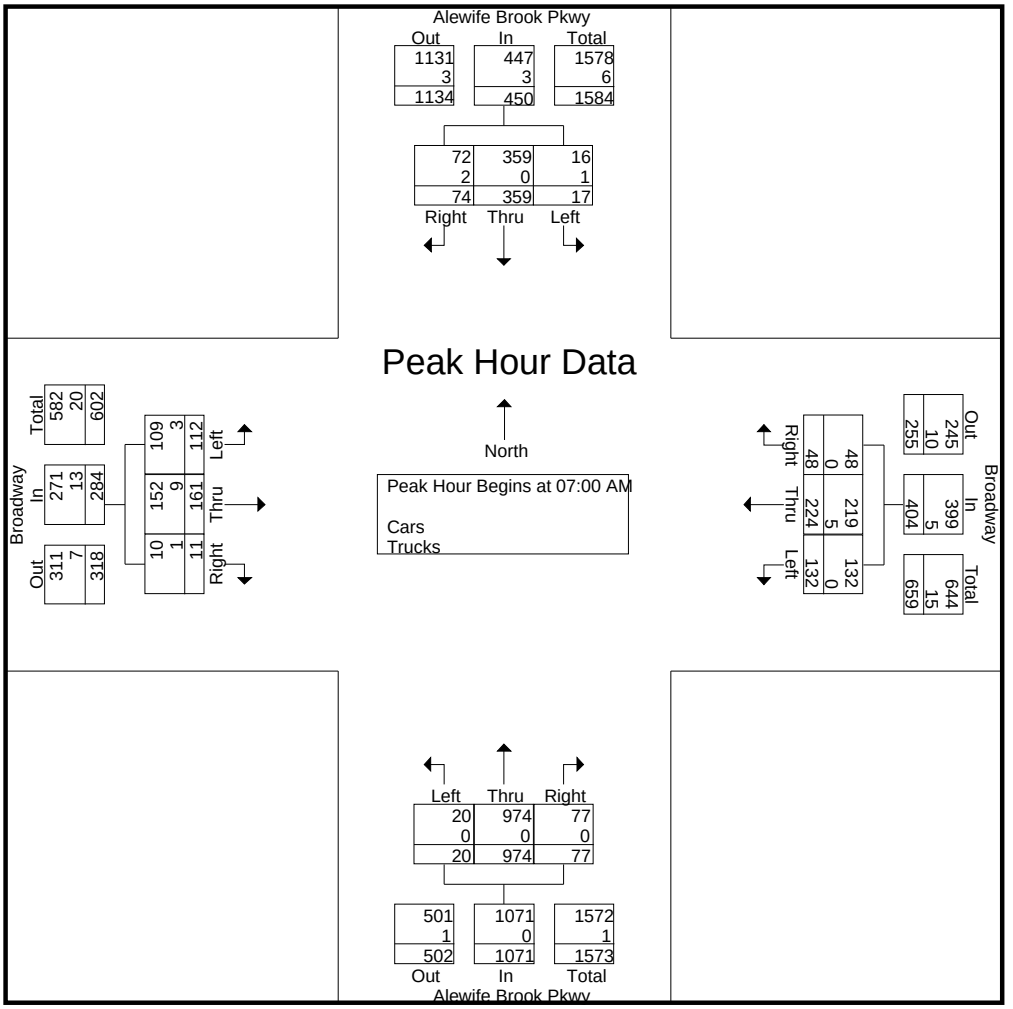
Groups Printed- Cars - Trucks

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	4	112	22	25	28	15	3	283	10	24	22	0	548
07:15 AM	1	84	22	33	54	10	3	247	15	34	36	2	541
07:30 AM	6	73	16	46	69	12	5	223	28	24	49	5	556
07:45 AM	6	90	14	28	73	11	9	221	24	30	54	4	564
Total	17	359	74	132	224	48	20	974	77	112	161	11	2209
08:00 AM	6	88	28	34	65	5	12	201	12	21	50	8	530
08:15 AM	10	101	22	48	53	14	5	200	18	33	39	3	546
08:30 AM	4	78	21	45	63	10	7	177	27	21	51	3	507
08:45 AM	3	108	31	39	62	5	8	178	16	24	35	5	514
Total	23	375	102	166	243	34	32	756	73	99	175	19	2097
Grand Total	40	734	176	298	467	82	52	1730	150	211	336	30	4306
Apprch %	4.2	77.3	18.5	35.2	55.1	9.7	2.7	89.5	7.8	36.6	58.2	5.2	
Total %	0.9	17	4.1	6.9	10.8	1.9	1.2	40.2	3.5	4.9	7.8	0.7	
Cars	39	731	170	297	453	82	52	1729	150	208	319	29	4259
% Cars	97.5	99.6	96.6	99.7	97	100	100	99.9	100	98.6	94.9	96.7	98.9
Trucks	1	3	6	1	14	0	0	1	0	3	17	1	47
% Trucks	2.5	0.4	3.4	0.3	3	0	0	0.1	0	1.4	5.1	3.3	1.1

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	**112**	**22**	**138**	25	28	**15**	68	3	**283**	10	**296**	24	22	0	46	548
07:15 AM	1	84	22	107	33	54	10	97	3	247	15	265	**34**	36	2	72	541
07:30 AM	**6**	73	16	95	**46**	69	12	**127**	5	223	**28**	256	24	49	**5**	78	556
07:45 AM	6	90	14	110	28	**73**	11	112	**9**	221	24	254	30	**54**	4	**88**	**564**
Total Volume	17	359	74	450	132	224	48	404	20	974	77	1071	112	161	11	284	2209
% App. Total	3.8	79.8	16.4		32.7	55.4	11.9		1.9	90.9	7.2		39.4	56.7	3.9		
PHF	.708	.801	.841	.815	.717	.767	.800	.795	.556	.860	.688	.905	.824	.745	.550	.807	.979
Cars	16	359	72	447	132	219	48	399	20	974	77	1071	109	152	10	271	2188
% Cars	94.1	100	97.3	99.3	100	97.8	100	98.8	100	100	100	100	97.3	94.4	90.9	95.4	99.0
Trucks	1	0	2	3	0	5	0	5	0	0	0	0	3	9	1	13	21
% Trucks	5.9	0	2.7	0.7	0	2.2	0	1.2	0	0	0	0	2.7	5.6	9.1	4.6	1.0

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	6	88	28	122	46	69	12	**127**	3	**283**	10	**296**	24	49	5	78
+15 mins.	**10**	101	22	133	28	**73**	11	112	3	247	15	265	30	**54**	4	**88**
+30 mins.	4	78	21	103	34	65	5	104	5	223	**28**	256	21	50	**8**	79
+45 mins.	3	**108**	**31**	**142**	**48**	53	**14**	115	**9**	221	24	254	**33**	39	3	75
Total Volume	23	375	102	500	156	260	42	458	20	974	77	1071	108	192	20	320
% App. Total	4.6	75	20.4		34.1	56.8	9.2		1.9	90.9	7.2		33.8	60	6.2	
PHF	.575	.868	.823	.880	.813	.890	.750	.902	.556	.860	.688	.905	.818	.889	.625	.909
Cars	23	372	98	493	156	253	42	451	20	974	77	1071	108	183	19	310
% Cars	100	99.2	96.1	98.6	100	97.3	100	98.5	100	100	100	100	100	95.3	95	96.9
Trucks	0	3	4	7	0	7	0	7	0	0	0	0	0	9	1	10
% Trucks	0	0.8	3.9	1.4	0	2.7	0	1.5	0	0	0	0	0	4.7	5	3.1

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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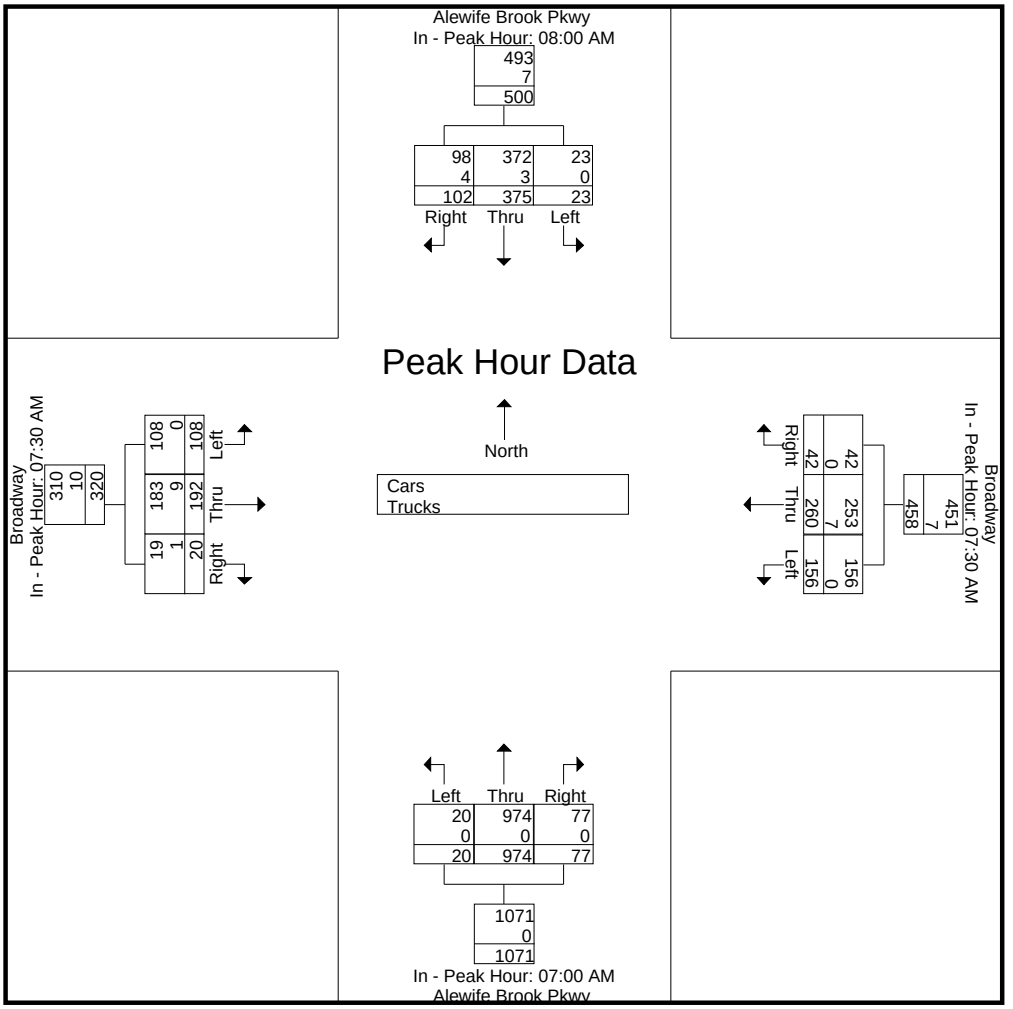

Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022

Groups Printed- Cars

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	112	20	25	27	15	3	283	10	23	22	0	543
07:15 AM	1	84	22	33	52	10	3	247	15	32	32	2	533
07:30 AM	6	73	16	46	69	12	5	223	28	24	47	4	553
07:45 AM	6	90	14	28	71	11	9	221	24	30	51	4	559
Total	16	359	72	132	219	48	20	974	77	109	152	10	2188
08:00 AM	6	88	27	34	63	5	12	201	12	21	48	8	525
08:15 AM	10	100	20	48	50	14	5	199	18	33	37	3	537
08:30 AM	4	77	21	45	59	10	7	177	27	21	49	3	500
08:45 AM	3	107	30	38	62	5	8	178	16	24	33	5	509
Total	23	372	98	165	234	34	32	755	73	99	167	19	2071
Grand Total	39	731	170	297	453	82	52	1729	150	208	319	29	4259
Apprch %	4.1	77.8	18.1	35.7	54.4	9.9	2.7	89.5	7.8	37.4	57.4	5.2	
Total %	0.9	17.2	4	7	10.6	1.9	1.2	40.6	3.5	4.9	7.5	0.7	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	3	**112**	20	**135**	25	27	**15**	67	3	**283**	10	**296**	23	22	0	45	543
07:15 AM	1	84	**22**	107	33	52	10	95	3	247	15	265	**32**	32	2	66	533
07:30 AM	**6**	73	16	95	**46**	69	12	**127**	5	223	**28**	256	24	47	**4**	75	553
07:45 AM	6	90	14	110	28	**71**	11	110	**9**	221	24	254	30	**51**	4	**85**	**559**
Total Volume	16	359	72	447	132	219	48	399	20	974	77	1071	109	152	10	271	2188
% App. Total	3.6	80.3	16.1		33.1	54.9	12		1.9	90.9	7.2		40.2	56.1	3.7		
PHF	.667	.801	.818	.828	.717	.771	.800	.785	.556	.860	.688	.905	.852	.745	.625	.797	.979

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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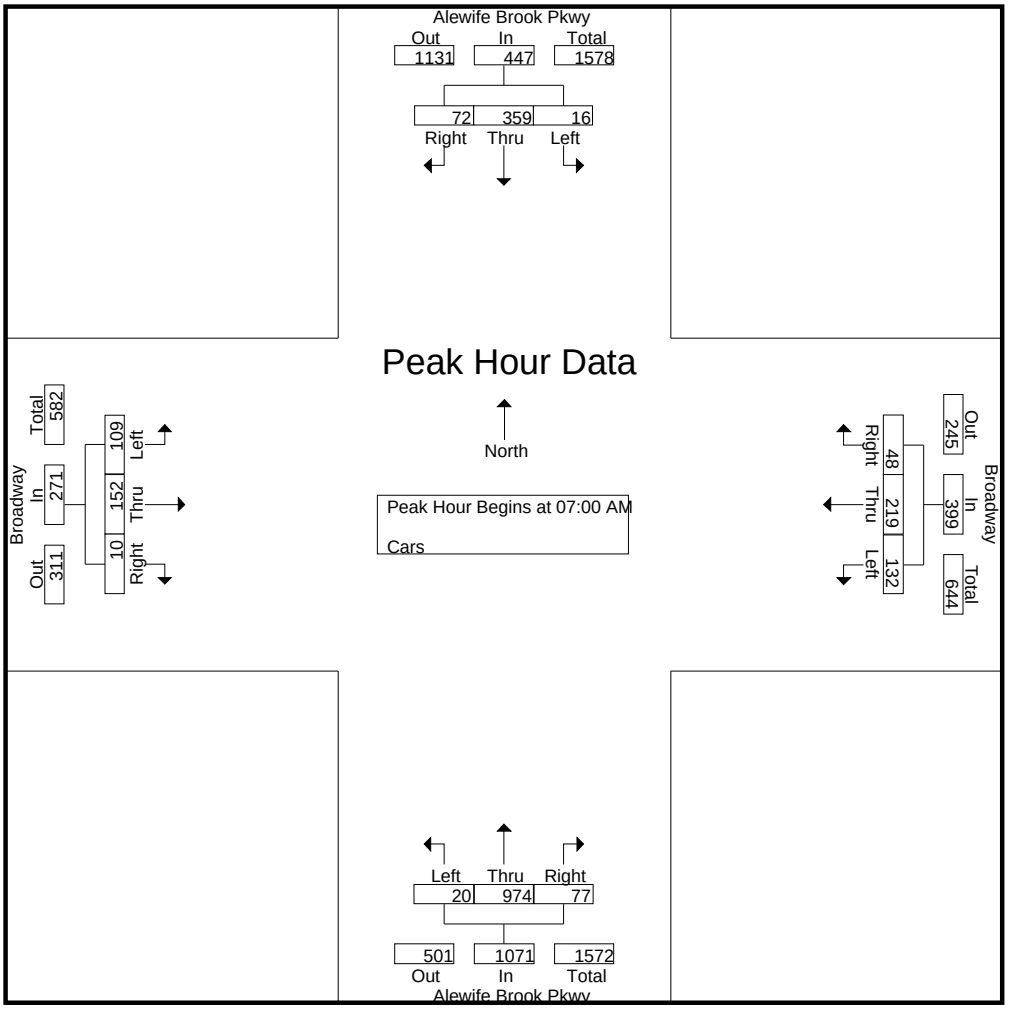

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	6	88	27	121	46	69	12	**127**	3	**283**	10	**296**	24	47	4	75
+15 mins.	**10**	100	20	130	28	**71**	11	110	3	247	15	265	30	**51**	4	**85**
+30 mins.	4	77	21	102	34	63	5	102	5	223	**28**	256	21	48	**8**	77
+45 mins.	3	**107**	**30**	**140**	**48**	50	**14**	112	**9**	221	24	254	**33**	37	3	73
Total Volume	23	372	98	493	156	253	42	451	20	974	77	1071	108	183	19	310
% App. Total	4.7	75.5	19.9		34.6	56.1	9.3		1.9	90.9	7.2		34.8	59	6.1	
PHF	.575	.869	.817	.880	.813	.891	.750	.888	.556	.860	.688	.905	.818	.897	.594	.912

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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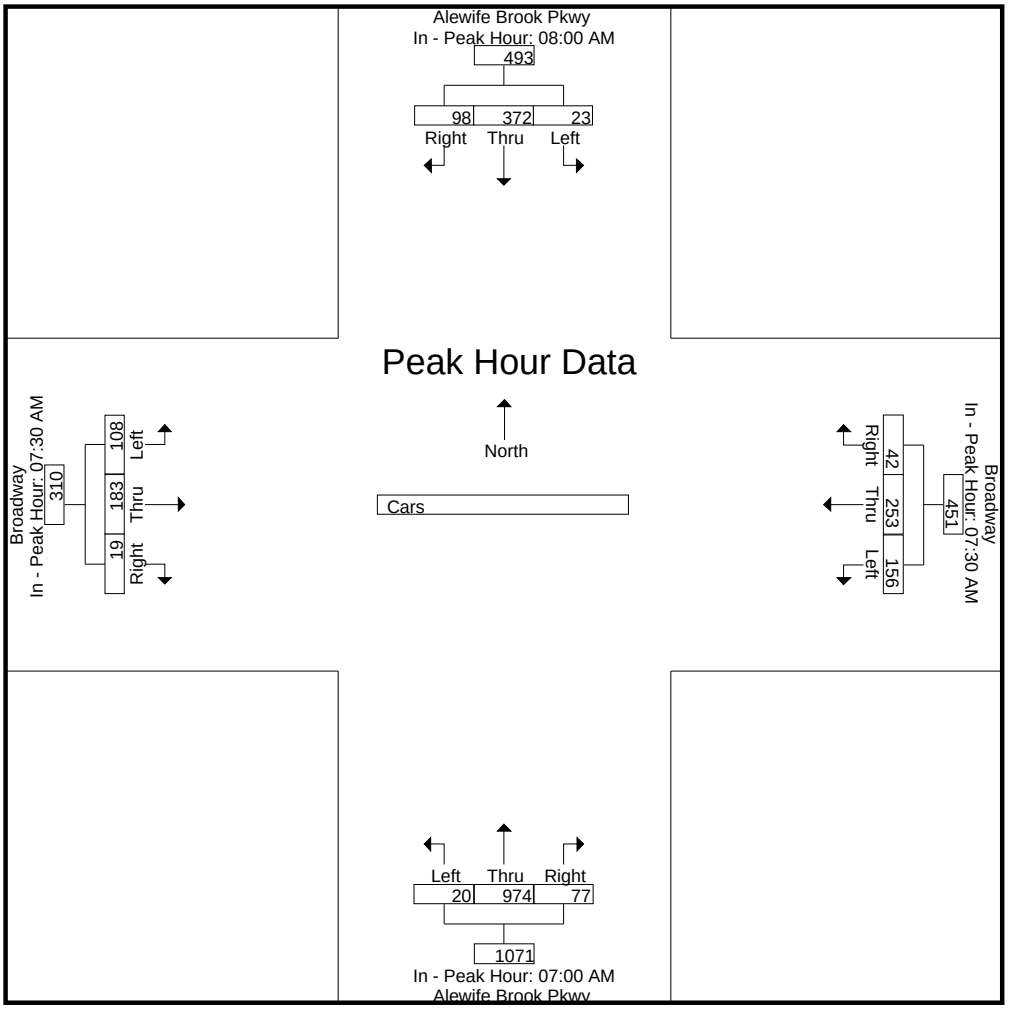

Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022

Groups Printed- Trucks

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	2	0	1	0	0	0	0	1	0	0	5
07:15 AM	0	0	0	0	2	0	0	0	0	2	4	0	8
07:30 AM	0	0	0	0	0	0	0	0	0	0	2	1	3
07:45 AM	0	0	0	0	2	0	0	0	0	0	3	0	5
Total	1	0	2	0	5	0	0	0	0	3	9	1	21
08:00 AM	0	0	1	0	2	0	0	0	0	0	2	0	5
08:15 AM	0	1	2	0	3	0	0	1	0	0	2	0	9
08:30 AM	0	1	0	0	4	0	0	0	0	0	2	0	7
08:45 AM	0	1	1	1	0	0	0	0	0	0	2	0	5
Total	0	3	4	1	9	0	0	1	0	0	8	0	26
Grand Total	1	3	6	1	14	0	0	1	0	3	17	1	47
Apprch %	10	30	60	6.7	93.3	0	0	100	0	14.3	81	4.8	
Total %	2.1	6.4	12.8	2.1	29.8	0	0	2.1	0	6.4	36.2	2.1	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	**3**	0	**3**	5
08:00 AM	0	0	1	1	0	2	0	2	0	0	0	0	0	2	0	2	5
08:15 AM	0	**1**	**2**	**3**	0	3	0	3	0	**1**	0	**1**	0	2	0	2	**9**
08:30 AM	0	1	0	1	0	**4**	0	**4**	0	0	0	0	0	2	0	2	7
Total Volume	0	2	3	5	0	11	0	11	0	1	0	1	0	9	0	9	26
% App. Total	0	40	60		0	100	0		0	100	0		0	100	0		
PHF	.000	.500	.375	.417	.000	.688	.000	.688	.000	.250	.000	.250	.000	.750	.000	.750	.722

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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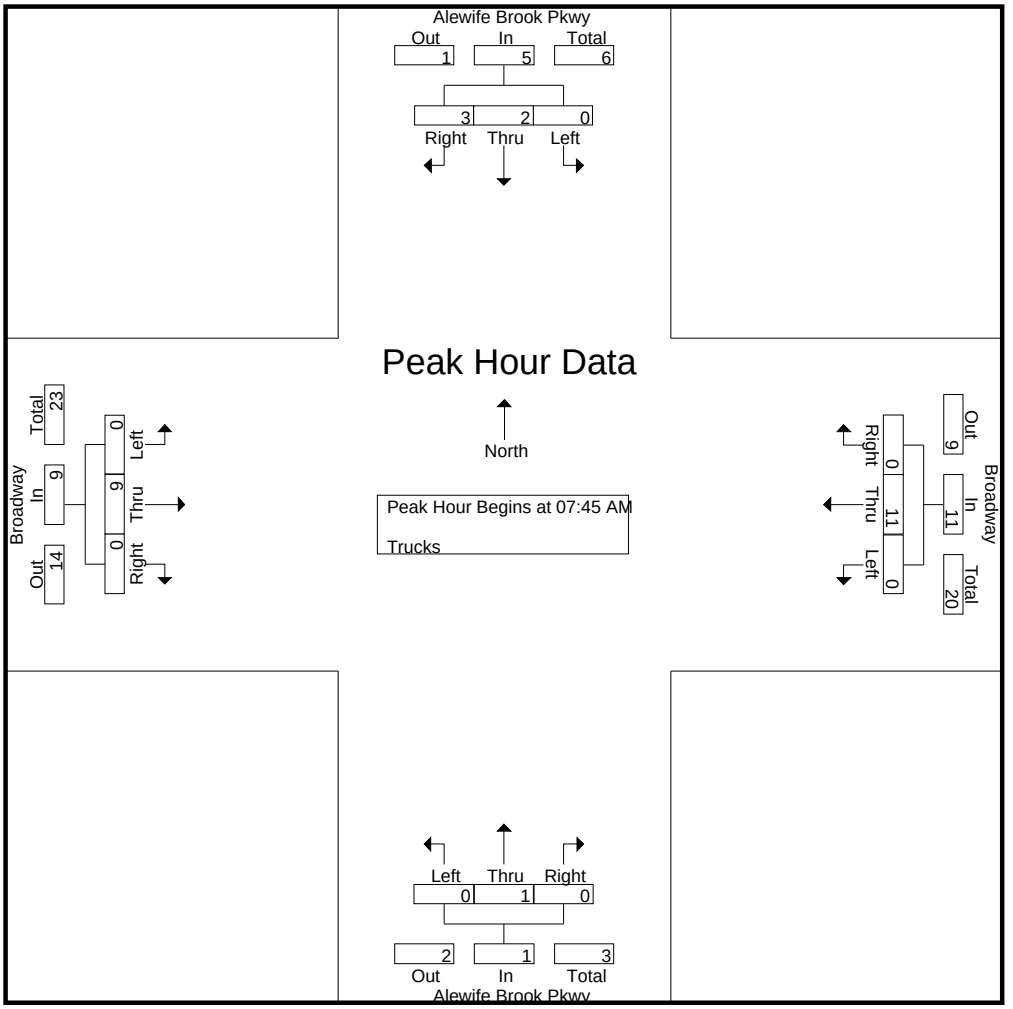

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:30 AM				07:15 AM			
+0 mins.	0	0	1	1	0	2	0	2	0	0	0	0	**2**	**4**	0	**6**
+15 mins.	0	**1**	**2**	**3**	0	2	0	2	0	0	0	0	0	2	**1**	3
+30 mins.	0	1	0	1	0	3	0	3	0	0	0	0	0	3	0	3
+45 mins.	0	1	1	2	0	**4**	0	**4**	0	**1**	0	**1**	0	2	0	2
Total Volume	0	3	4	7	0	11	0	11	0	1	0	1	2	11	1	14
% App. Total	0	42.9	57.1		0	100	0		0	100	0		14.3	78.6	7.1	
PHF	.000	.750	.500	.583	.000	.688	.000	.688	.000	.250	.000	.250	.250	.688	.250	.583

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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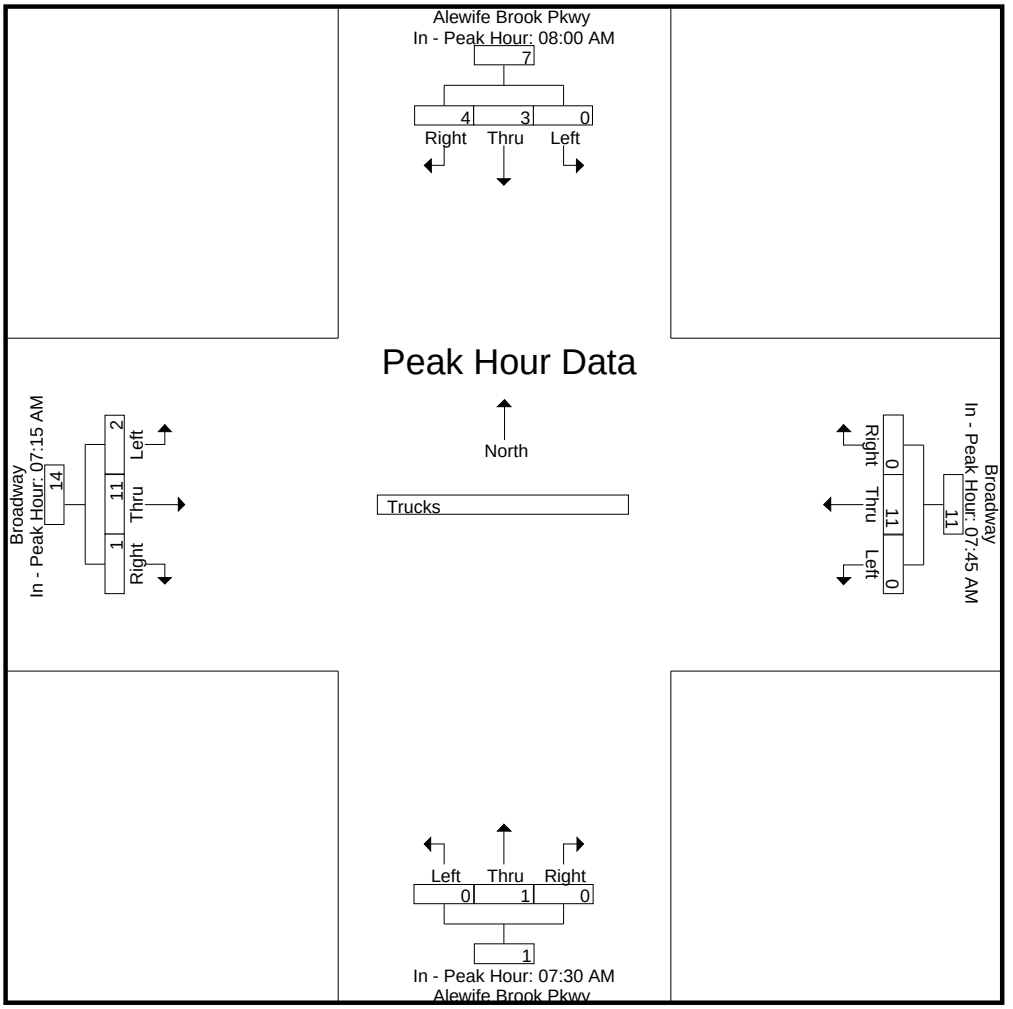

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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Groups Printed- Bikes Peds

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	2	0	0	1	3	0	0	0	3	0	2	1	0	8	4	12
07:15 AM	0	0	0	2	0	0	0	8	0	0	0	0	1	1	0	1	11	2	13
07:30 AM	0	0	0	5	0	3	3	7	0	3	0	6	0	1	0	3	21	10	31
07:45 AM	2	1	1	5	0	3	7	8	0	4	0	4	1	2	0	0	17	21	38
Total	2	1	1	14	0	6	11	26	0	7	0	13	2	6	1	4	57	37	94
08:00 AM	1	0	0	6	0	9	5	8	2	0	0	6	0	3	0	2	22	20	42
08:15 AM	3	1	1	2	0	4	2	9	0	1	0	11	0	3	0	3	25	15	40
08:30 AM	0	0	0	2	0	1	0	7	0	3	0	7	0	0	0	0	16	4	20
08:45 AM	1	0	0	6	0	3	0	4	0	1	0	8	2	1	0	2	20	8	28
Total	5	1	1	16	0	17	7	28	2	5	0	32	2	7	0	7	83	47	130
Grand Total	7	2	2	30	0	23	18	54	2	12	0	45	4	13	1	11	140	84	224
Apprch %	63.6	18.2	18.2		0	56.1	43.9		14.3	85.7	0		22.2	72.2	5.6				
Total %	8.3	2.4	2.4		0	27.4	21.4		2.4	14.3	0		4.8	15.5	1.2		62.5	37.5	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	3	3	6	0	3	0	3	0	1	0	1	10
07:45 AM	2	**1**	**1**	4	0	3	**7**	10	0	**4**	0	**4**	**1**	2	0	**3**	**21**
08:00 AM	1	0	0	1	0	**9**	5	**14**	**2**	0	0	2	0	**3**	0	3	20
08:15 AM	**3**	1	1	**5**	0	4	2	6	0	1	0	1	0	3	0	3	15
Total Volume	6	2	2	10	0	19	17	36	2	8	0	10	1	9	0	10	66
% App. Total	60	20	20		0	52.8	47.2		20	80	0		10	90	0		
PHF	.500	.500	.500	.500	.000	.528	.607	.643	.250	.500	.000	.625	.250	.750	.000	.833	.786

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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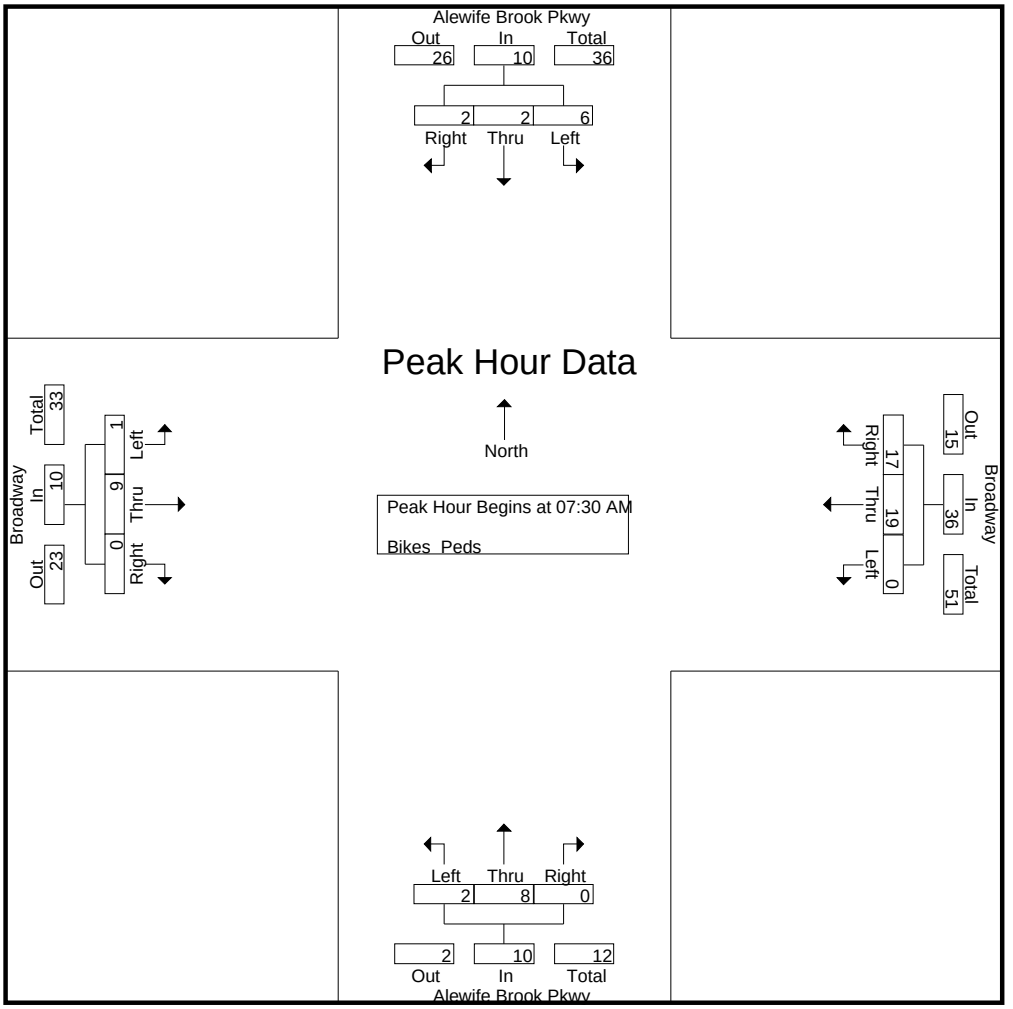

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	3	3	6	0	3	0	3	0	1	0	1
+15 mins.	2	**1**	**1**	4	0	3	**7**	10	0	**4**	0	**4**	**1**	2	0	**3**
+30 mins.	1	0	0	1	0	**9**	5	**14**	**2**	0	0	2	0	**3**	0	3
+45 mins.	**3**	1	1	**5**	0	4	2	6	0	1	0	1	0	3	0	3
Total Volume	6	2	2	10	0	19	17	36	2	8	0	10	1	9	0	10
% App. Total	60	20	20		0	52.8	47.2		20	80	0		10	90	0	
PHF	.500	.500	.500	.500	.000	.528	.607	.643	.250	.500	.000	.625	.250	.750	.000	.833

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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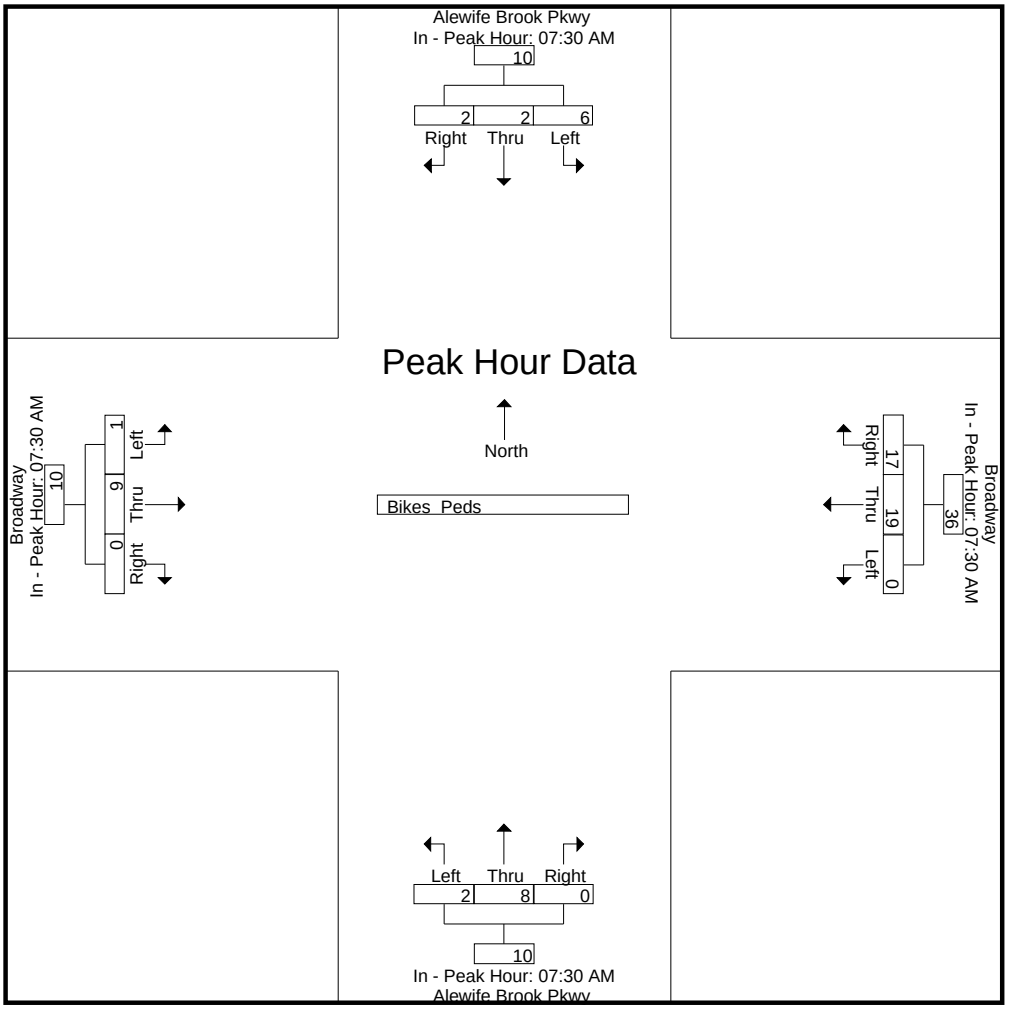

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 1

Groups Printed- Cars - Trucks

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	189	33	46	55	5	1	183	16	27	52	2	614
04:15 PM	5	196	25	47	41	9	0	226	19	28	38	4	638
04:30 PM	4	164	30	48	57	12	2	200	20	26	61	4	628
04:45 PM	9	197	23	51	55	9	3	173	16	27	49	4	616
Total	23	746	111	192	208	35	6	782	71	108	200	14	2496
05:00 PM	6	185	36	36	41	11	0	246	21	23	62	5	672
05:15 PM	7	192	44	54	89	5	2	194	22	30	60	2	701
05:30 PM	2	185	34	41	54	3	1	174	31	32	59	3	619
05:45 PM	4	167	33	44	72	6	1	162	29	34	69	6	627
Total	19	729	147	175	256	25	4	776	103	119	250	16	2619
Grand Total	42	1475	258	367	464	60	10	1558	174	227	450	30	5115
Apprch %	2.4	83.1	14.5	41.2	52.1	6.7	0.6	89.4	10	32.1	63.6	4.2	
Total %	0.8	28.8	5	7.2	9.1	1.2	0.2	30.5	3.4	4.4	8.8	0.6	
Cars	42	1473	258	366	455	60	10	1558	174	227	438	30	5091
% Cars	100	99.9	100	99.7	98.1	100	100	100	100	100	97.3	100	99.5
Trucks	0	2	0	1	9	0	0	0	0	0	12	0	24
% Trucks	0	0.1	0	0.3	1.9	0	0	0	0	0	2.7	0	0.5

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	185	36	227	36	41	**11**	88	0	**246**	21	**267**	23	62	5	90	672
05:15 PM	**7**	**192**	**44**	**243**	**54**	**89**	5	**148**	**2**	194	22	218	30	60	2	92	**701**
05:30 PM	2	185	34	221	41	54	3	98	1	174	**31**	206	32	59	3	94	619
05:45 PM	4	167	33	204	44	72	6	122	1	162	29	192	**34**	**69**	**6**	**109**	627
Total Volume	19	729	147	895	175	256	25	456	4	776	103	883	119	250	16	385	2619
% App. Total	2.1	81.5	16.4		38.4	56.1	5.5		0.5	87.9	11.7		30.9	64.9	4.2		
PHF	.679	.949	.835	.921	.810	.719	.568	.770	.500	.789	.831	.827	.875	.906	.667	.883	.934
Cars	19	729	147	895	175	251	25	451	4	776	103	883	119	244	16	379	2608
% Cars	100	100	100	100	100	98.0	100	98.9	100	100	100	100	100	97.6	100	98.4	99.6
Trucks	0	0	0	0	0	5	0	5	0	0	0	0	0	6	0	6	11
% Trucks	0	0	0	0	0	2.0	0	1.1	0	0	0	0	0	2.4	0	1.6	0.4

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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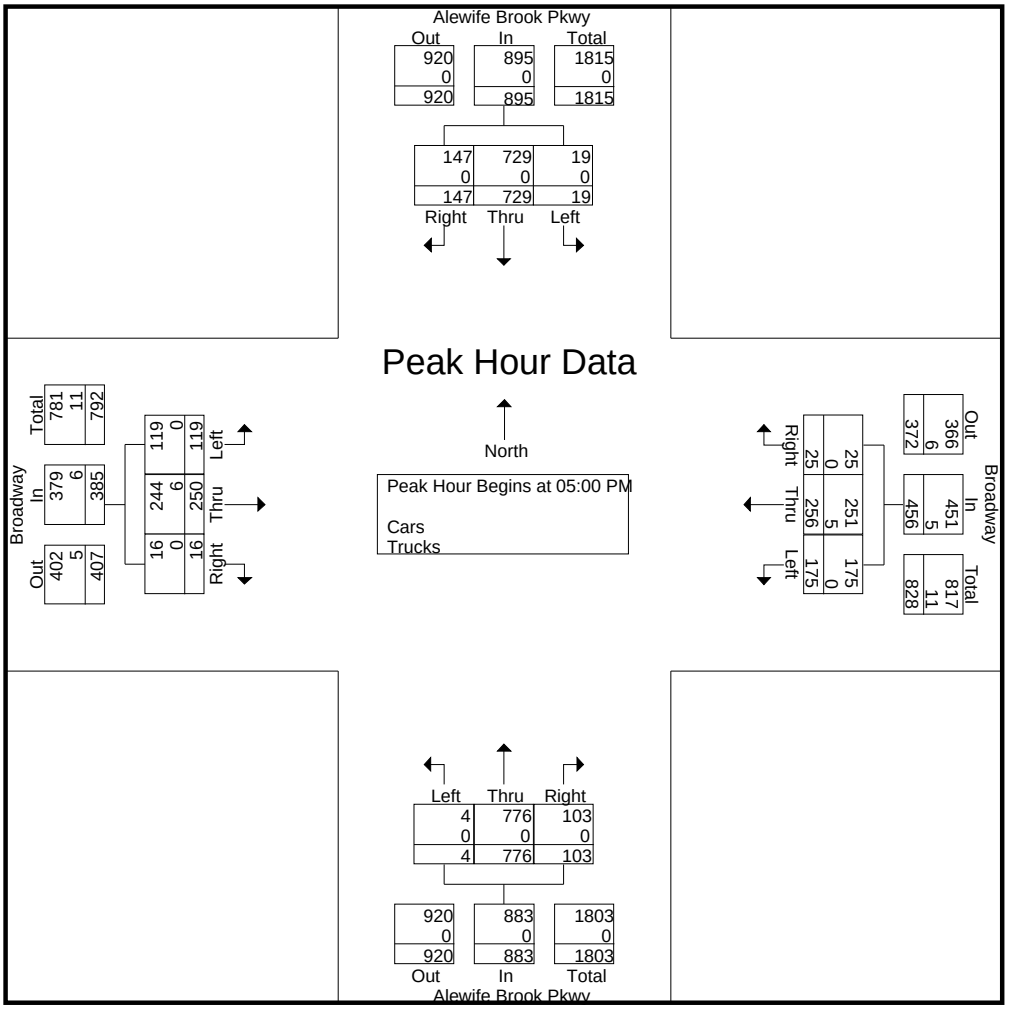
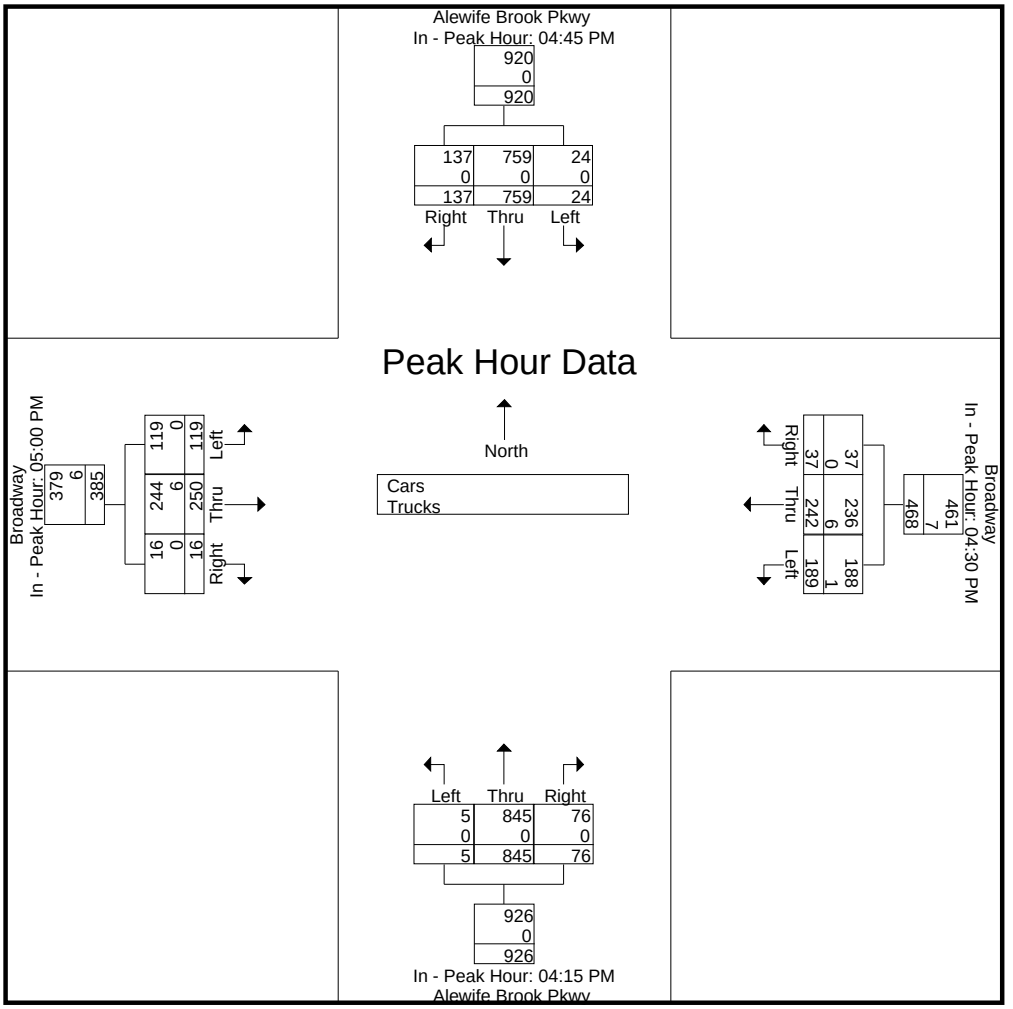


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:15 PM				05:00 PM			
+0 mins.	**9**	**197**	23	229	48	57	**12**	117	0	226	19	245	23	62	5	90
+15 mins.	6	185	36	227	51	55	9	115	2	200	20	222	30	60	2	92
+30 mins.	7	192	**44**	**243**	36	41	11	88	**3**	173	16	192	32	59	3	94
+45 mins.	2	185	34	221	**54**	**89**	5	**148**	0	**246**	**21**	**267**	**34**	**69**	**6**	**109**
Total Volume	24	759	137	920	189	242	37	468	5	845	76	926	119	250	16	385
% App. Total	2.6	82.5	14.9		40.4	51.7	7.9		0.5	91.3	8.2		30.9	64.9	4.2	
PHF	.667	.963	.778	.947	.875	.680	.771	.791	.417	.859	.905	.867	.875	.906	.667	.883
Cars	24	759	137	920	188	236	37	461	5	845	76	926	119	244	16	379
% Cars	100	100	100	100	99.5	97.5	100	98.5	100	100	100	100	100	97.6	100	98.4
Trucks	0	0	0	0	1	6	0	7	0	0	0	0	0	6	0	6
% Trucks	0	0	0	0	0.5	2.5	0	1.5	0	0	0	0	0	2.4	0	1.6

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 3



Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 4

Groups Printed- Cars

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	189	33	46	54	5	1	183	16	27	50	2	611
04:15 PM	5	195	25	47	40	9	0	226	19	28	37	4	635
04:30 PM	4	163	30	47	55	12	2	200	20	26	59	4	622
04:45 PM	9	197	23	51	55	9	3	173	16	27	48	4	615
Total	23	744	111	191	204	35	6	782	71	108	194	14	2483
05:00 PM	6	185	36	36	39	11	0	246	21	23	60	5	668
05:15 PM	7	192	44	54	87	5	2	194	22	30	59	2	698
05:30 PM	2	185	34	41	53	3	1	174	31	32	58	3	617
05:45 PM	4	167	33	44	72	6	1	162	29	34	67	6	625
Total	19	729	147	175	251	25	4	776	103	119	244	16	2608
Grand Total	42	1473	258	366	455	60	10	1558	174	227	438	30	5091
Apprch %	2.4	83.1	14.6	41.5	51.6	6.8	0.6	89.4	10	32.7	63	4.3	
Total %	0.8	28.9	5.1	7.2	8.9	1.2	0.2	30.6	3.4	4.5	8.6	0.6	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	185	36	227	36	39	**11**	86	0	**246**	21	**267**	23	60	5	88	668
05:15 PM	**7**	**192**	**44**	**243**	**54**	**87**	5	**146**	**2**	194	22	218	30	59	2	91	**698**
05:30 PM	2	185	34	221	41	53	3	97	1	174	**31**	206	32	58	3	93	617
05:45 PM	4	167	33	204	44	72	6	122	1	162	29	192	**34**	**67**	**6**	**107**	625
Total Volume	19	729	147	895	175	251	25	451	4	776	103	883	119	244	16	379	2608
% App. Total	2.1	81.5	16.4		38.8	55.7	5.5		0.5	87.9	11.7		31.4	64.4	4.2		
PHF	.679	.949	.835	.921	.810	.721	.568	.772	.500	.789	.831	.827	.875	.910	.667	.886	.934

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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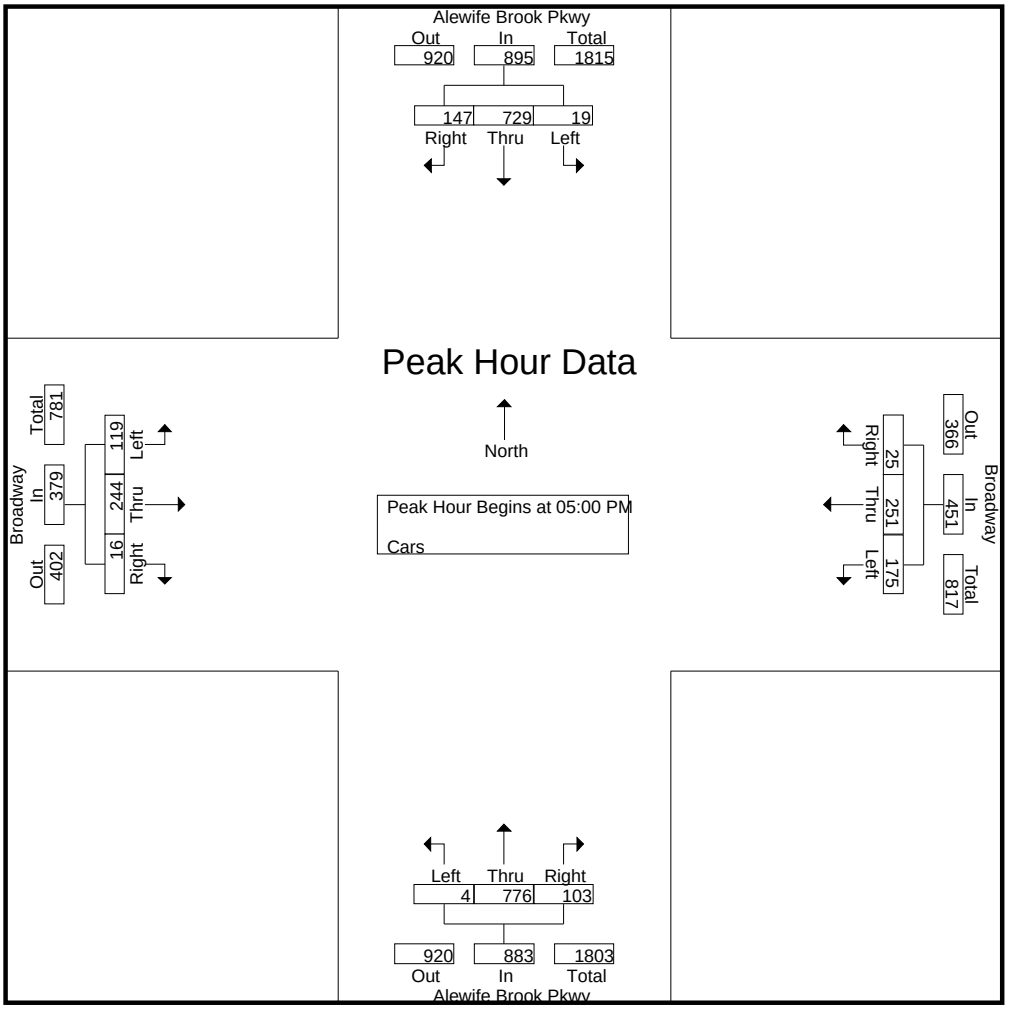

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:15 PM				05:00 PM			
+0 mins.	**9**	**197**	23	229	47	55	**12**	114	0	226	19	245	23	60	5	88
+15 mins.	6	185	36	227	51	55	9	115	2	200	20	222	30	59	2	91
+30 mins.	7	192	**44**	**243**	36	39	11	86	**3**	173	16	192	32	58	3	93
+45 mins.	2	185	34	221	**54**	**87**	5	**146**	0	**246**	**21**	**267**	**34**	**67**	**6**	**107**
Total Volume	24	759	137	920	188	236	37	461	5	845	76	926	119	244	16	379
% App. Total	2.6	82.5	14.9		40.8	51.2	8		0.5	91.3	8.2		31.4	64.4	4.2	
PHF	.667	.963	.778	.947	.870	.678	.771	.789	.417	.859	.905	.867	.875	.910	.667	.886

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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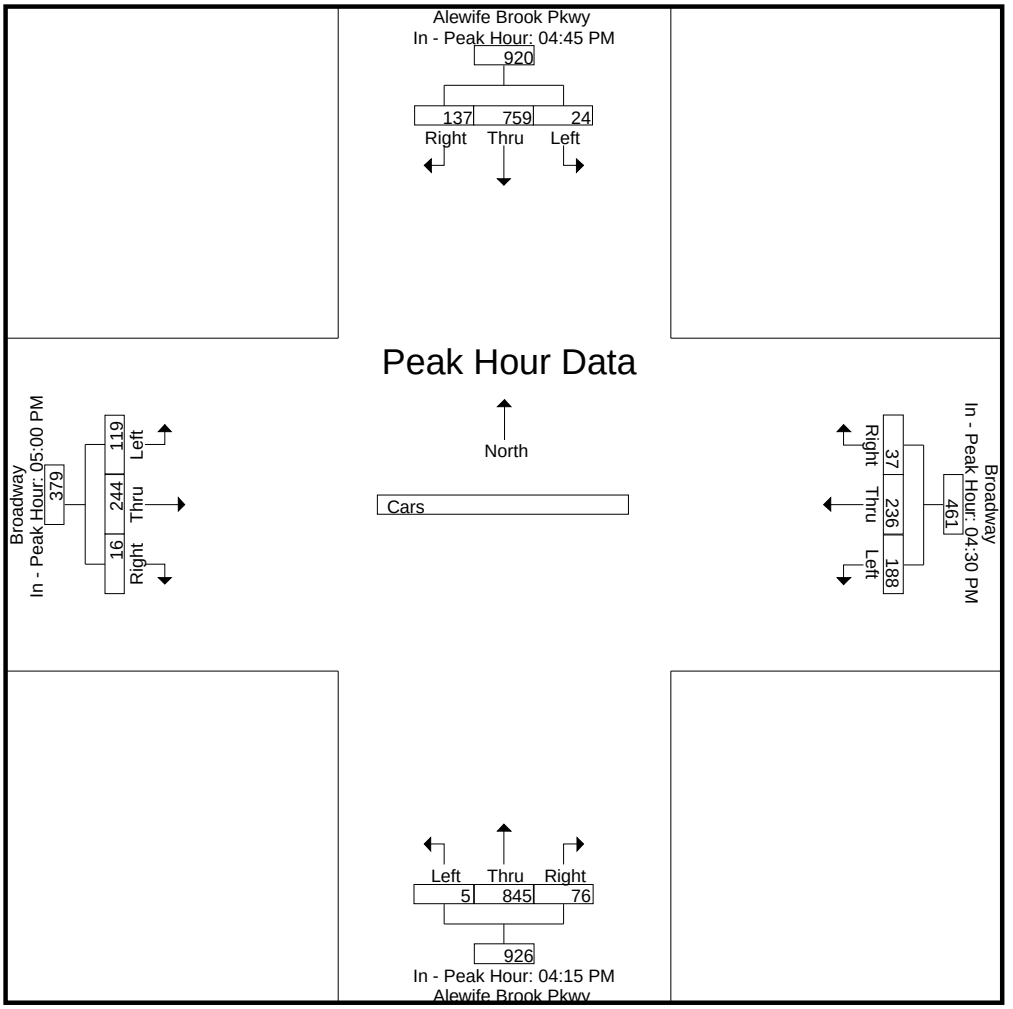


N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 7

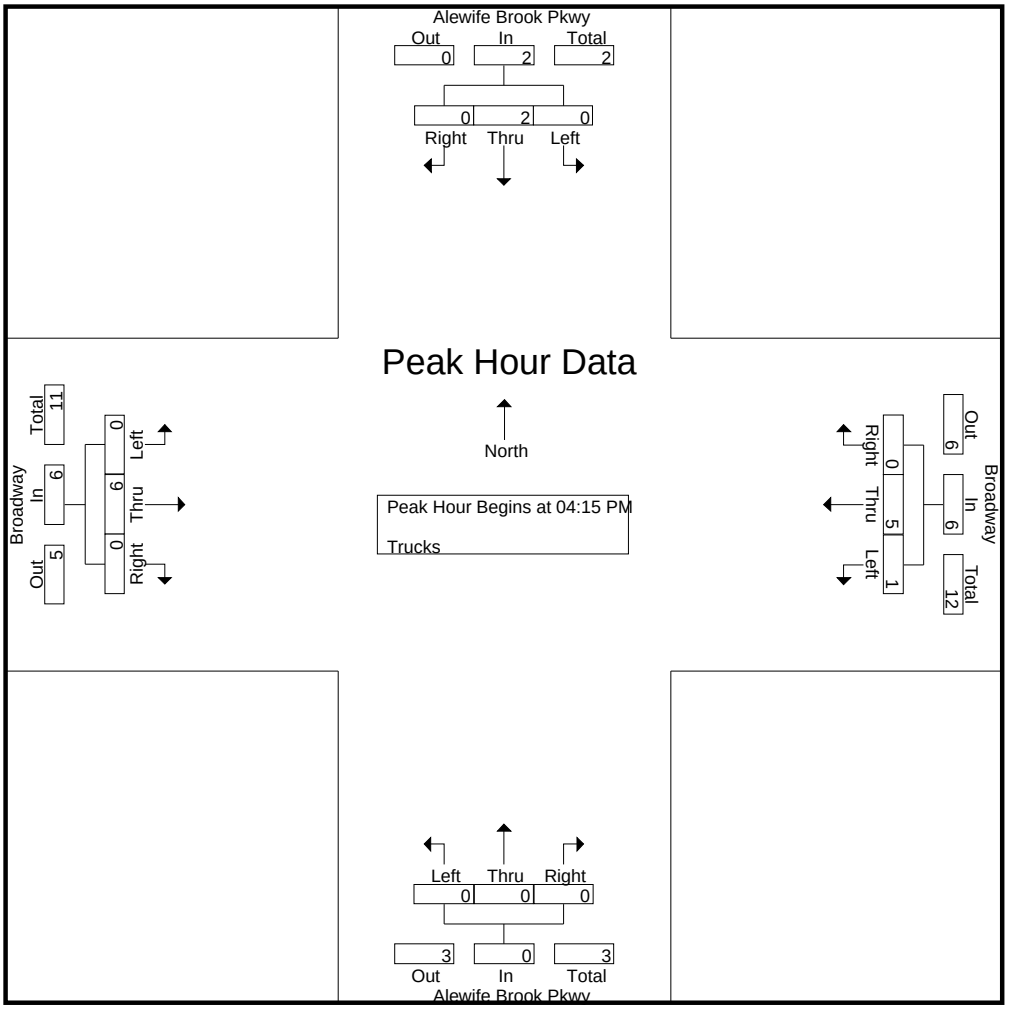
Groups Printed- Trucks

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
04:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	3
04:30 PM	0	1	0	1	2	0	0	0	0	0	2	0	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	2	0	1	4	0	0	0	0	0	6	0	13
05:00 PM	0	0	0	0	2	0	0	0	0	0	2	0	4
05:15 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
05:30 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	5	0	0	0	0	0	6	0	11
Grand Total	0	2	0	1	9	0	0	0	0	0	12	0	24
Apprch %	0	100	0	10	90	0	0	0	0	0	100	0	
Total %	0	8.3	0	4.2	37.5	0	0	0	0	0	50	0	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	**1**	0	**1**	0	1	0	1	0	0	0	0	0	1	0	1	3
04:30 PM	0	1	0	1	**1**	**2**	0	**3**	0	0	0	0	0	**2**	0	**2**	**6**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Total Volume	0	2	0	2	1	5	0	6	0	0	0	0	0	6	0	6	14
% App. Total	0	100	0		16.7	83.3	0		0	0	0		0	100	0		
PHF	.000	.500	.000	.500	.250	.625	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750	.583

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 8



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	**1**	**2**	0	**3**	0	0	0	0	0	**2**	0	**2**
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	1	0	1	0	2	0	2	0	0	0	0	0	2	0	2
+45 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
Total Volume	0	2	0	2	1	6	0	7	0	0	0	0	0	6	0	6
% App. Total	0	100	0		14.3	85.7	0		0	0	0		0	100	0	
PHF	.000	.500	.000	.500	.250	.750	.000	.583	.000	.000	.000	.000	.000	.750	.000	.750

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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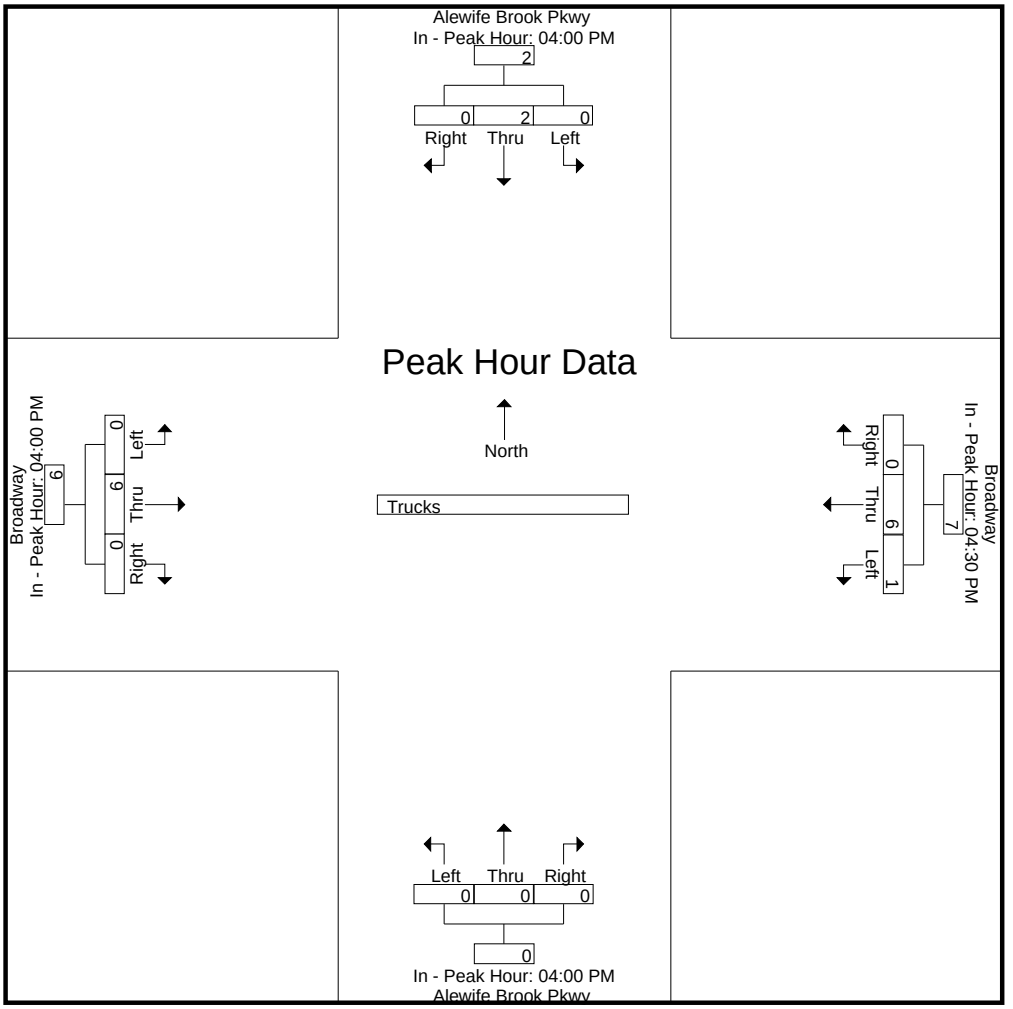


Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022

Groups Printed- Bikes Peds

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	1	0	16	0	2	0	6	0	0	0	10	0	2	0	2	34	6	40
04:15 PM	1	5	1	7	0	2	1	5	0	0	0	11	0	5	0	3	26	15	41
04:30 PM	4	1	0	6	2	1	1	9	0	2	0	14	1	4	0	3	32	16	48
04:45 PM	3	3	0	9	1	2	1	12	0	1	0	22	0	3	0	0	43	14	57
Total	9	10	1	38	3	7	3	32	0	3	0	57	1	14	0	8	135	51	186
05:00 PM	2	2	0	7	0	0	1	10	0	0	0	13	1	2	0	3	33	8	41
05:15 PM	3	1	1	3	0	4	2	25	0	0	0	29	1	4	0	9	66	16	82
05:30 PM	4	4	0	11	0	1	0	15	0	0	0	24	0	0	0	7	57	9	66
05:45 PM	0	3	1	10	1	1	1	12	0	0	0	9	0	4	0	5	36	11	47
Total	9	10	2	31	1	6	4	62	0	0	0	75	2	10	0	24	192	44	236
Grand Total	18	20	3	69	4	13	7	94	0	3	0	132	3	24	0	32	327	95	422
Apprch %	43.9	48.8	7.3		16.7	54.2	29.2		0	100	0		11.1	88.9	0				
Total %	18.9	21.1	3.2		4.2	13.7	7.4		0	3.2	0		3.2	25.3	0		77.5	22.5	

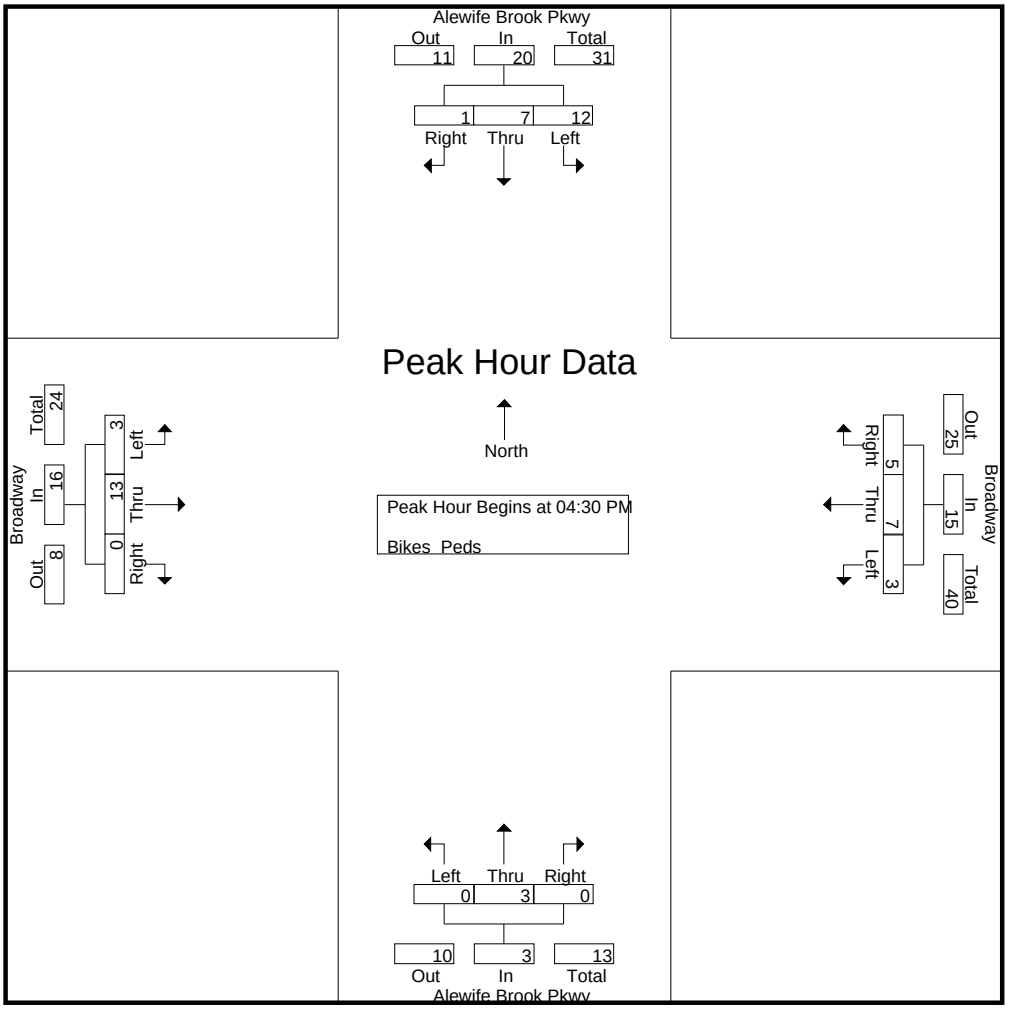
	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**4**	1	0	5	**2**	1	1	4	0	**2**	0	**2**	**1**	**4**	0	**5**	**16**
04:45 PM	3	**3**	0	**6**	1	2	1	4	0	1	0	1	0	3	0	3	14
05:00 PM	2	2	0	4	0	0	1	1	0	0	0	0	1	2	0	3	8
05:15 PM	3	1	**1**	5	0	**4**	**2**	**6**	0	0	0	0	1	4	0	5	16
Total Volume	12	7	1	20	3	7	5	15	0	3	0	3	3	13	0	16	54
% App. Total	60	35	5		20	46.7	33.3		0	100	0		18.8	81.2	0		
PHF	.750	.583	.250	.833	.375	.438	.625	.625	.000	.375	.000	.375	.750	.813	.000	.800	.844

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 11



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:00 PM				04:15 PM			
+0 mins.	3	3	0	6	**2**	1	1	4	0	0	0	0	0	**5**	0	**5**
+15 mins.	2	2	0	4	1	2	1	4	0	0	0	0	**1**	4	0	5
+30 mins.	3	1	**1**	5	0	0	1	1	0	**2**	0	**2**	0	3	0	3
+45 mins.	**4**	**4**	0	**8**	0	**4**	**2**	**6**	0	1	0	1	1	2	0	3
Total Volume	12	10	1	23	3	7	5	15	0	3	0	3	2	14	0	16
% App. Total	52.2	43.5	4.3		20	46.7	33.3		0	100	0		12.5	87.5	0	
PHF	.750	.625	.250	.719	.375	.438	.625	.625	.000	.375	.000	.375	.500	.700	.000	.800

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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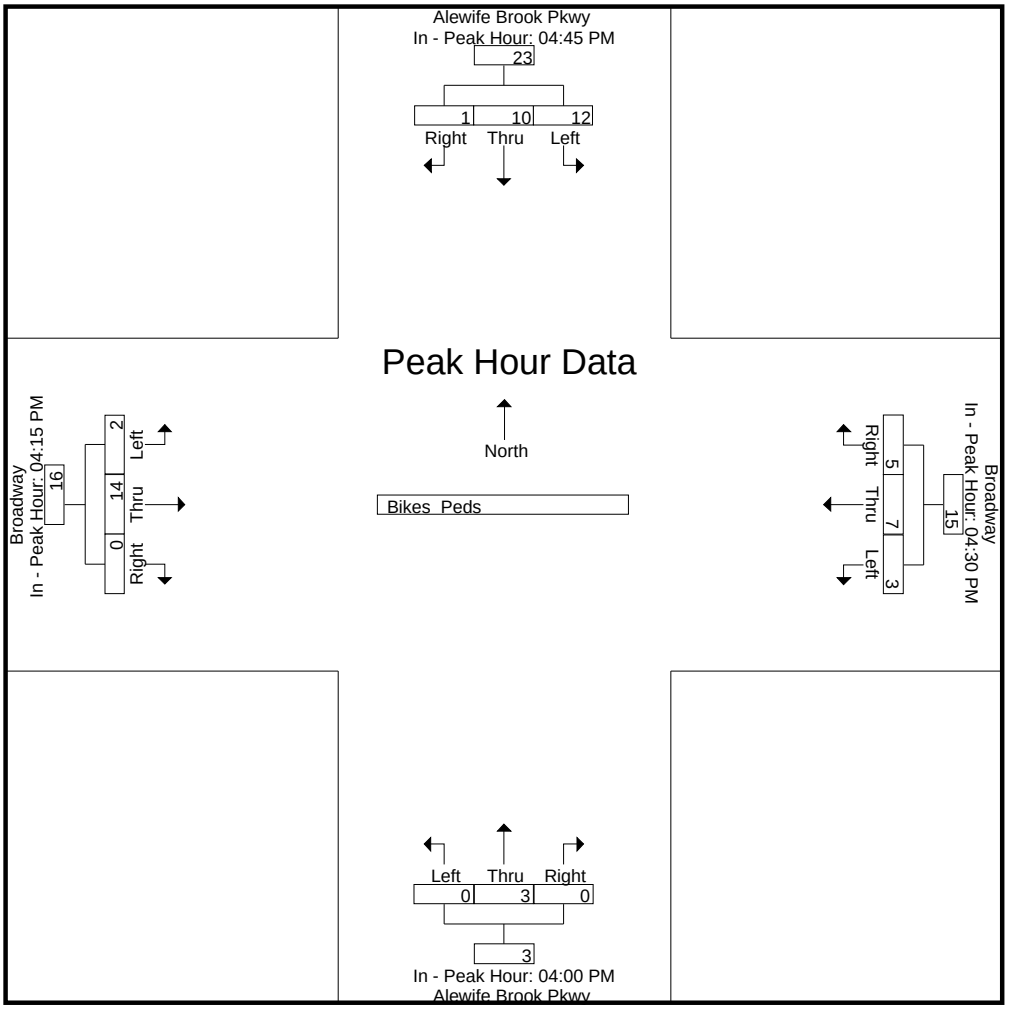


Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 1

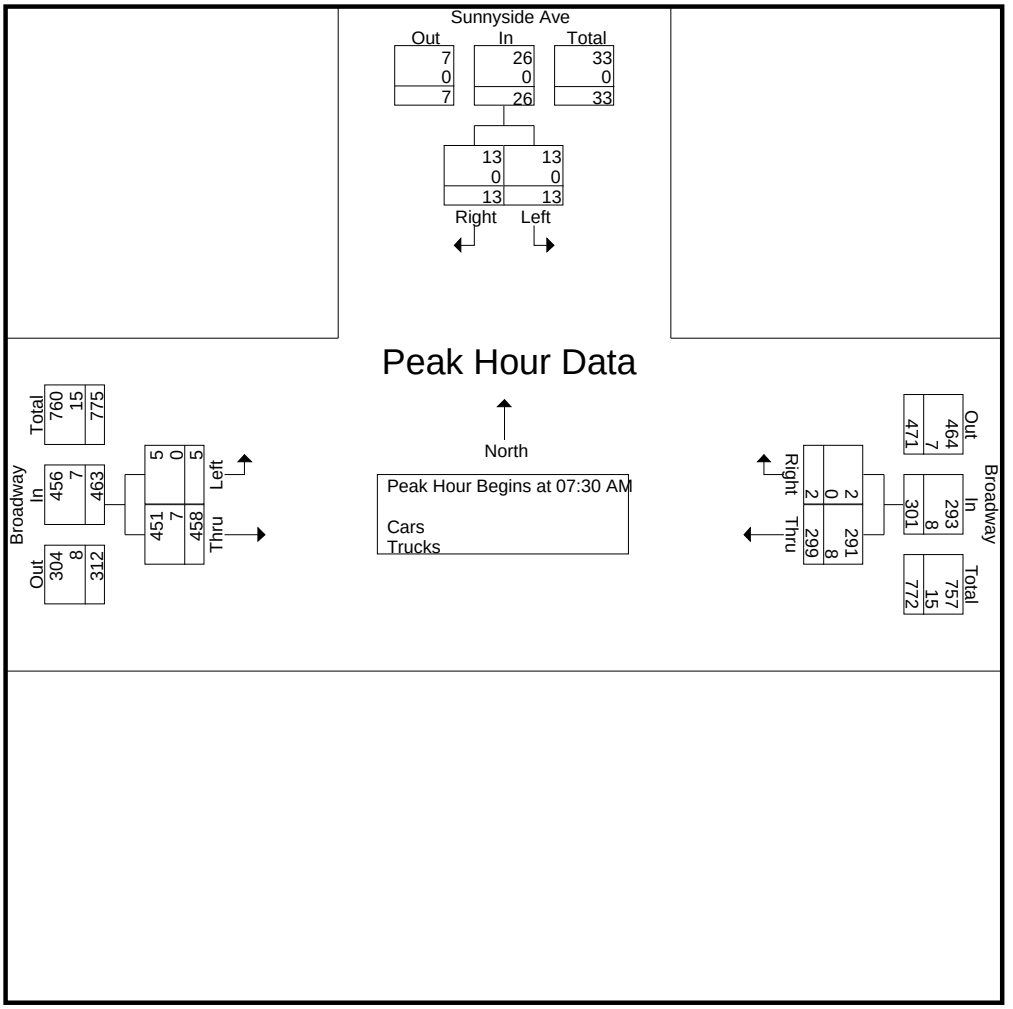
Groups Printed- Cars - Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	2	7	34	1	3	71	118
07:15 AM	1	5	55	0	2	89	152
07:30 AM	2	5	79	1	3	118	208
07:45 AM	5	1	84	1	1	120	212
Total	10	18	252	3	9	398	690
08:00 AM	4	1	68	0	1	109	183
08:15 AM	2	6	68	0	0	111	187
08:30 AM	3	6	77	1	2	96	185
08:45 AM	2	1	56	0	1	123	183
Total	11	14	269	1	4	439	738
Grand Total	21	32	521	4	13	837	1428
Apprch %	39.6	60.4	99.2	0.8	1.5	98.5	
Total %	1.5	2.2	36.5	0.3	0.9	58.6	
Cars	21	32	505	4	12	822	1396
% Cars	100	100	96.9	100	92.3	98.2	97.8
Trucks	0	0	16	0	1	15	32
% Trucks	0	0	3.1	0	7.7	1.8	2.2

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	2	5	7	79	**1**	80	**3**	118	**121**	208
07:45 AM	**5**	1	6	**84**	1	**85**	1	**120**	121	**212**
08:00 AM	4	1	5	68	0	68	1	109	110	183
08:15 AM	2	**6**	**8**	68	0	68	0	111	111	187
Total Volume	13	13	26	299	2	301	5	458	463	790
% App. Total	50	50		99.3	0.7		1.1	98.9		
PHF	.650	.542	.813	.890	.500	.885	.417	.954	.957	.932
Cars	13	13	26	291	2	293	5	451	456	775
% Cars	100	100	100	97.3	100	97.3	100	98.5	98.5	98.1
Trucks	0	0	0	8	0	8	0	7	7	15
% Trucks	0	0	0	2.7	0	2.7	0	1.5	1.5	1.9

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 2

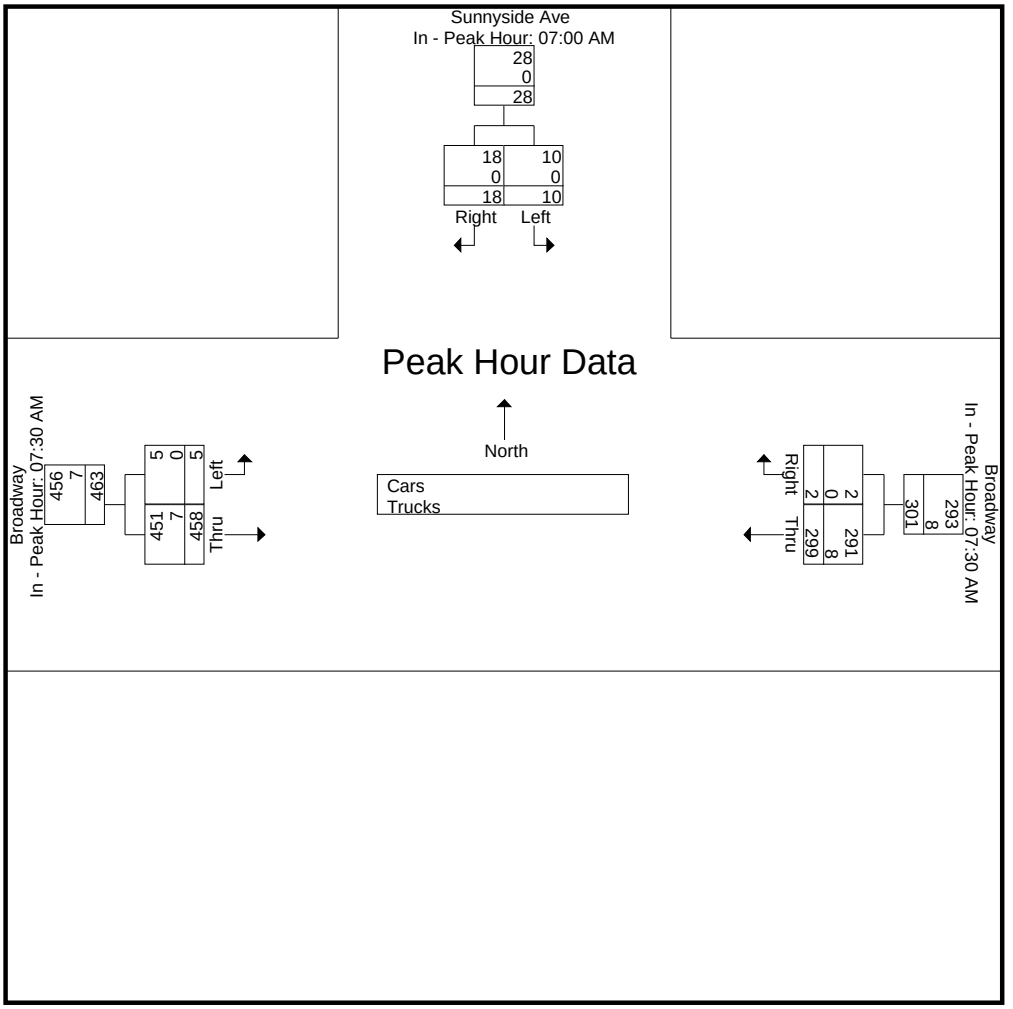


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	2	**7**	**9**	79	**1**	80	**3**	118	**121**
+15 mins.	1	5	6	**84**	1	**85**	1	**120**	121
+30 mins.	2	5	7	68	0	68	1	109	110
+45 mins.	**5**	1	6	68	0	68	0	111	111
Total Volume	10	18	28	299	2	301	5	458	463
% App. Total	35.7	64.3		99.3	0.7		1.1	98.9	
PHF	.500	.643	.778	.890	.500	.885	.417	.954	.957
Cars	10	18	28	291	2	293	5	451	456
% Cars	100	100	100	97.3	100	97.3	100	98.5	98.5
Trucks	0	0	0	8	0	8	0	7	7
% Trucks	0	0	0	2.7	0	2.7	0	1.5	1.5

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022

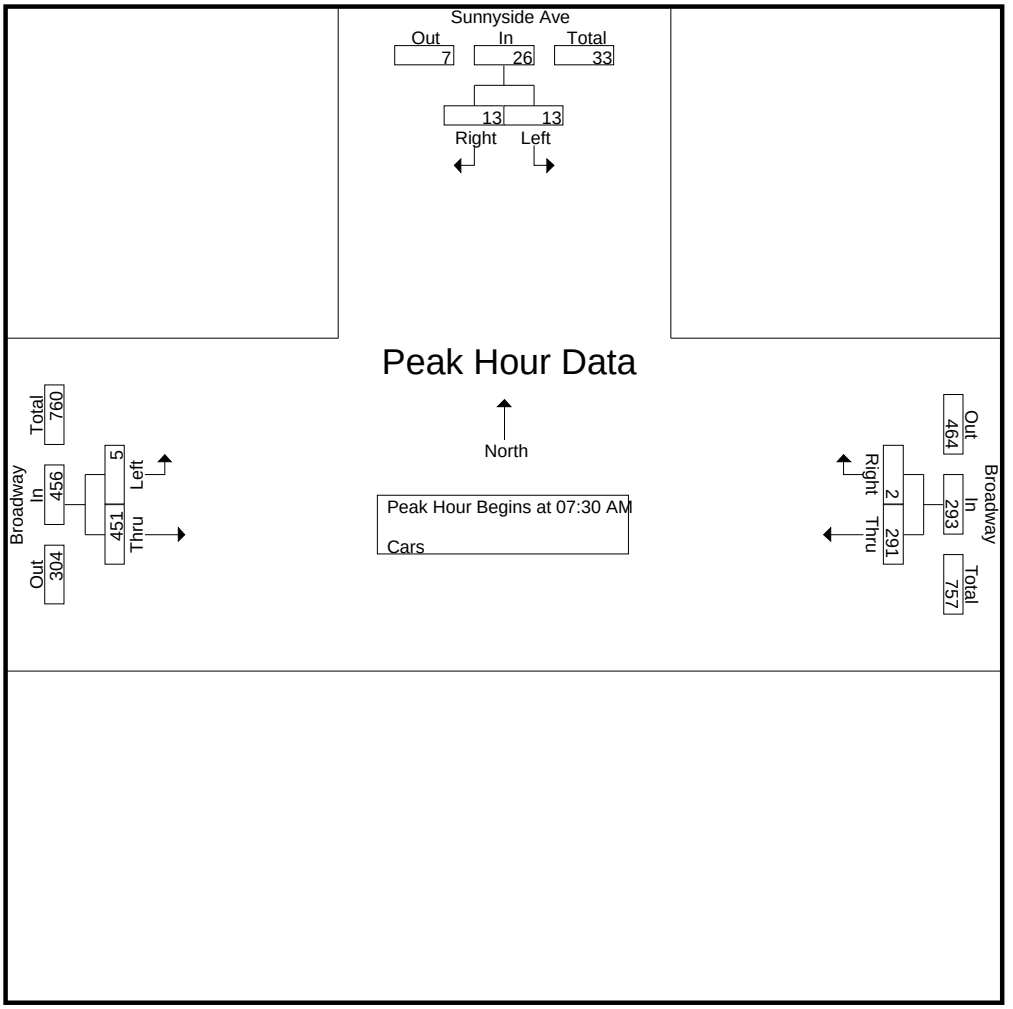
Groups Printed- Cars

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	2	7	34	1	3	70	117
07:15 AM	1	5	51	0	1	88	146
07:30 AM	2	5	78	1	3	118	207
07:45 AM	5	1	82	1	1	118	208
Total	10	18	245	3	8	394	678
08:00 AM	4	1	65	0	1	107	178
08:15 AM	2	6	66	0	0	108	182
08:30 AM	3	6	75	1	2	92	179
08:45 AM	2	1	54	0	1	121	179
Total	11	14	260	1	4	428	718
Grand Total	21	32	505	4	12	822	1396
Apprch %	39.6	60.4	99.2	0.8	1.4	98.6	
Total %	1.5	2.3	36.2	0.3	0.9	58.9	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	2	5	7	78	**1**	79	**3**	**118**	**121**	207
07:45 AM	**5**	1	6	**82**	1	**83**	1	118	119	**208**
08:00 AM	4	1	5	65	0	65	1	107	108	178
08:15 AM	2	**6**	**8**	66	0	66	0	108	108	182
Total Volume	13	13	26	291	2	293	5	451	456	775
% App. Total	50	50		99.3	0.7		1.1	98.9		
PHF	.650	.542	.813	.887	.500	.883	.417	.956	.942	.931

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 5

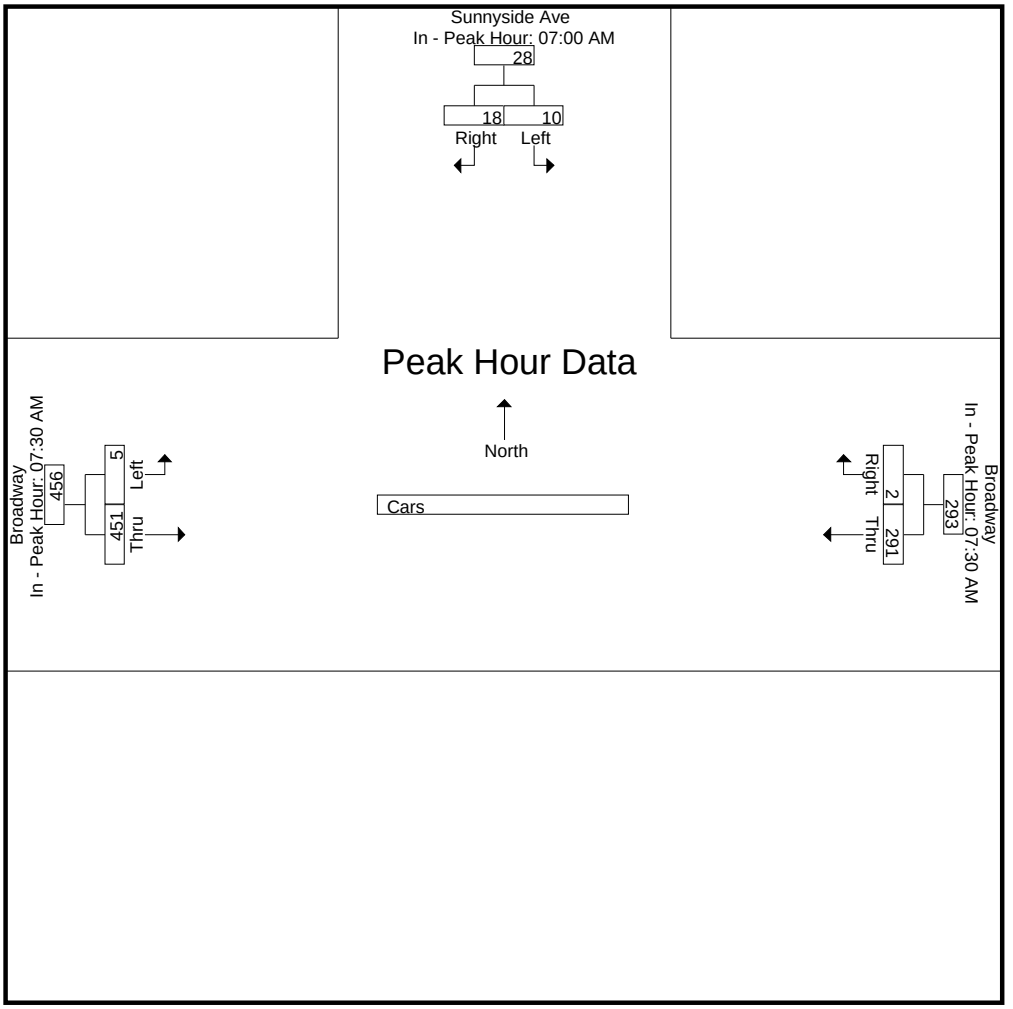


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	2	**7**	**9**	78	**1**	79	**3**	**118**	**121**
+15 mins.	1	5	6	**82**	1	**83**	1	118	119
+30 mins.	2	5	7	65	0	65	1	107	108
+45 mins.	**5**	1	6	66	0	66	0	108	108
Total Volume	10	18	28	291	2	293	5	451	456
% App. Total	35.7	64.3		99.3	0.7		1.1	98.9	
PHF	.500	.643	.778	.887	.500	.883	.417	.956	.942

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 6



N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 7

Groups Printed- Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	0	0	0	1	1
07:15 AM	0	0	4	0	1	1	6
07:30 AM	0	0	1	0	0	0	1
07:45 AM	0	0	2	0	0	2	4
Total	0	0	7	0	1	4	12
08:00 AM	0	0	3	0	0	2	5
08:15 AM	0	0	2	0	0	3	5
08:30 AM	0	0	2	0	0	4	6
08:45 AM	0	0	2	0	0	2	4
Total	0	0	9	0	0	11	20
Grand Total	0	0	16	0	1	15	32
Apprch %	0	0	100	0	6.2	93.8	
Total %	0	0	50	0	3.1	46.9	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	2	0	2	0	2	2	4
08:00 AM	0	0	0	**3**	0	**3**	0	2	2	5
08:15 AM	0	0	0	2	0	2	0	3	3	5
08:30 AM	0	0	0	2	0	2	0	**4**	**4**	**6**
Total Volume	0	0	0	9	0	9	0	11	11	20
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.750	.000	.750	.000	.688	.688	.833

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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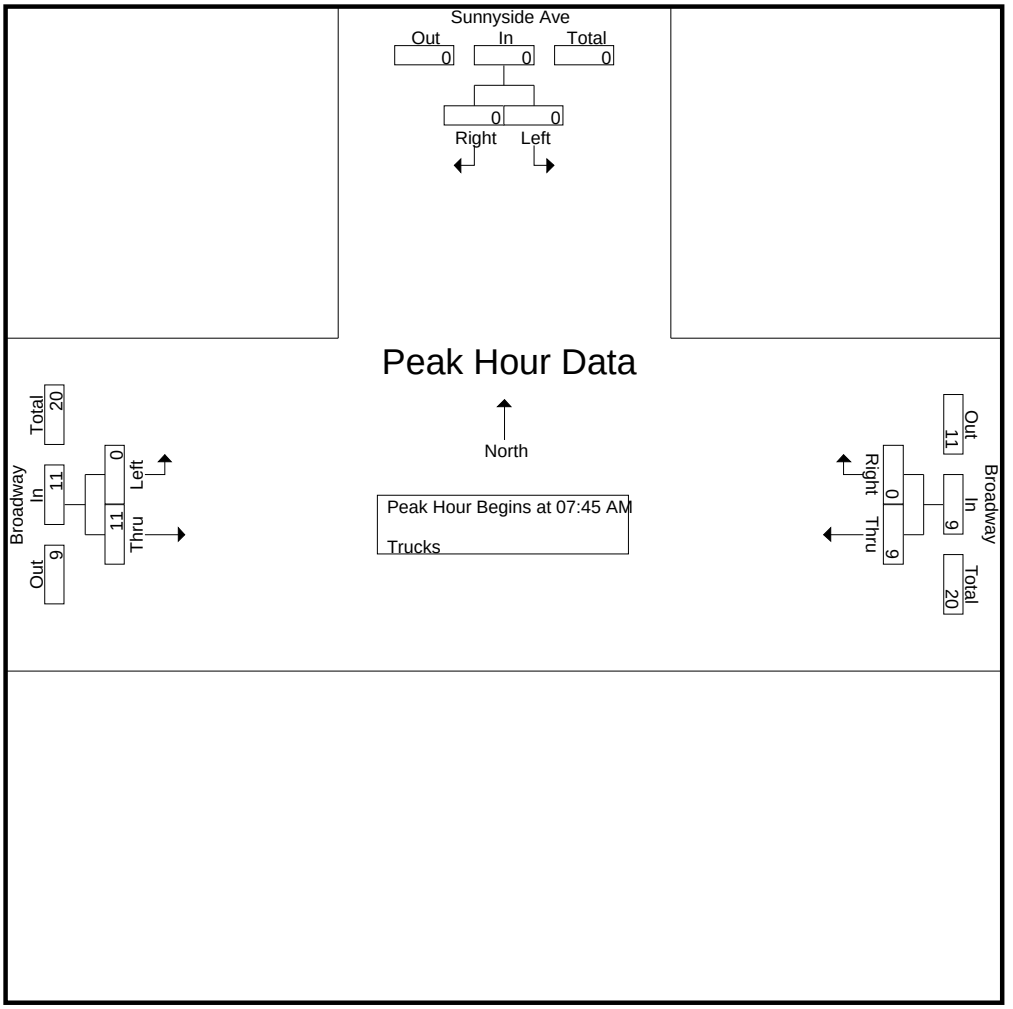

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			07:45 AM		
+0 mins.	0	0	0	**4**	0	**4**	0	2	2
+15 mins.	0	0	0	1	0	1	0	2	2
+30 mins.	0	0	0	2	0	2	0	3	3
+45 mins.	0	0	0	3	0	3	0	**4**	**4**
Total Volume	0	0	0	10	0	10	0	11	11
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.625	.000	.625	.000	.688	.688

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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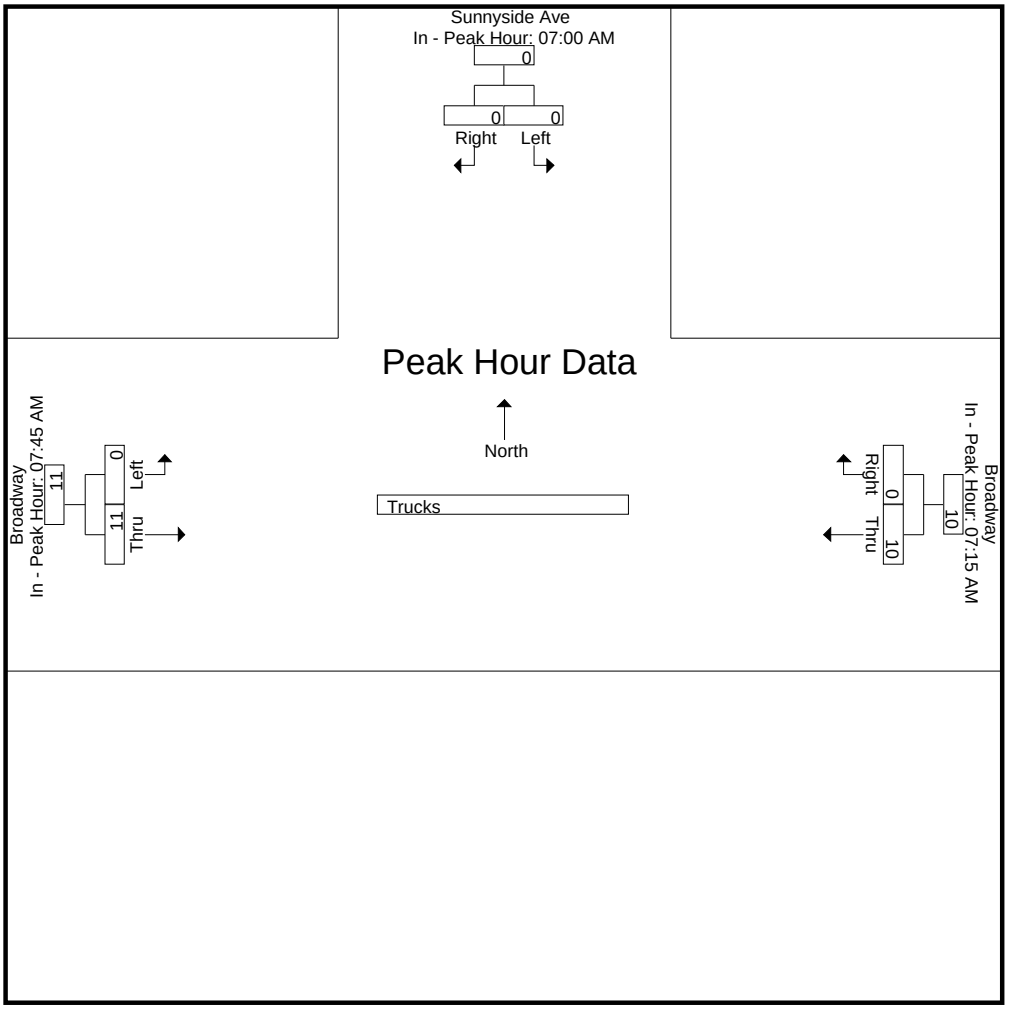

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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Groups Printed- Bikes Peds

	Sunnyside Ave From North			Broadway From East			Broadway From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	1	1	1	3	0	1	0	4	3	7
07:15 AM	0	0	4	1	0	0	0	0	0	4	1	5
07:30 AM	2	0	1	1	0	0	0	4	0	1	7	8
07:45 AM	1	0	2	3	0	0	0	6	2	4	10	14
Total	3	0	8	6	1	3	0	11	2	13	21	34
08:00 AM	0	0	4	1	0	1	1	5	0	5	7	12
08:15 AM	0	0	4	3	0	2	0	2	1	7	5	12
08:30 AM	0	0	2	0	0	1	0	0	0	3	0	3
08:45 AM	0	0	5	3	0	1	0	4	0	6	7	13
Total	0	0	15	7	0	5	1	11	1	21	19	40
Grand Total	3	0	23	13	1	8	1	22	3	34	40	74
Apprch %	100	0		92.9	7.1		4.3	95.7				
Total %	7.5	0		32.5	2.5		2.5	55		45.9	54.1	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**2**	0	**2**	1	0	1	0	4	4	7
07:45 AM	1	0	1	**3**	0	**3**	0	**6**	**6**	**10**
08:00 AM	0	0	0	1	0	1	**1**	5	6	7
08:15 AM	0	0	0	3	0	3	0	2	2	5
Total Volume	3	0	3	8	0	8	1	17	18	29
% App. Total	100	0		100	0		5.6	94.4		
PHF	.375	.000	.375	.667	.000	.667	.250	.708	.750	.725

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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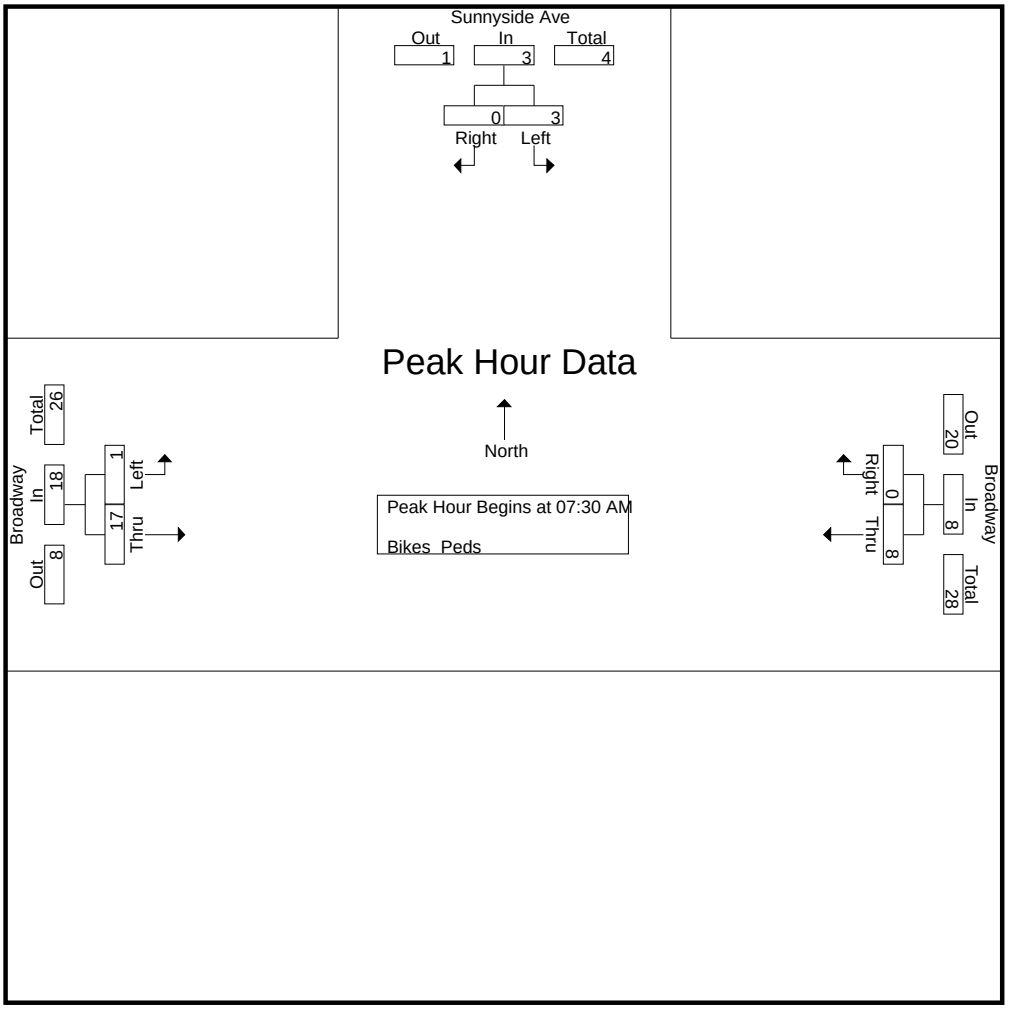

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	1	0	1	0	4	4
+15 mins.	0	0	0	**3**	0	**3**	0	**6**	**6**
+30 mins.	**2**	0	**2**	1	0	1	**1**	5	6
+45 mins.	1	0	1	3	0	3	0	2	2
Total Volume	3	0	3	8	0	8	1	17	18
% App. Total	100	0		100	0		5.6	94.4	
PHF	.375	.000	.375	.667	.000	.667	.250	.708	.750

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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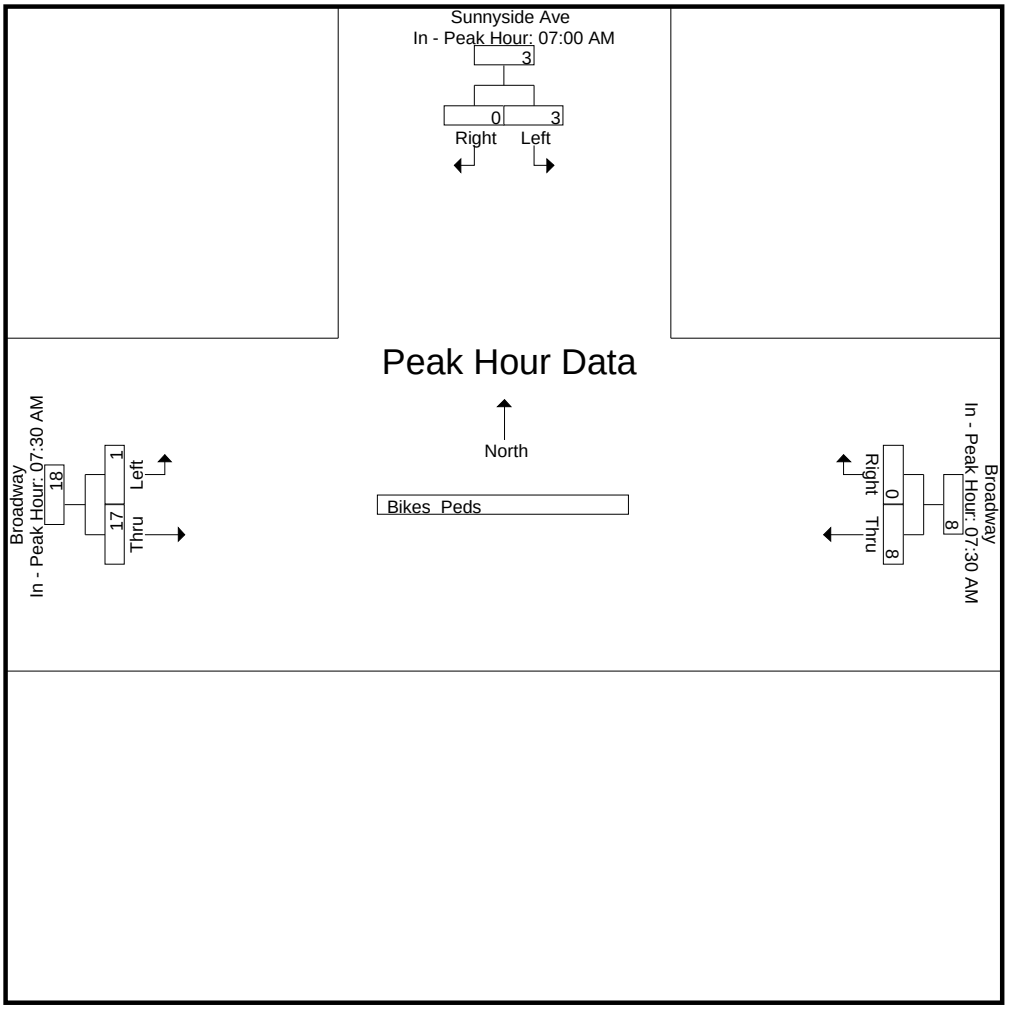


Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 1

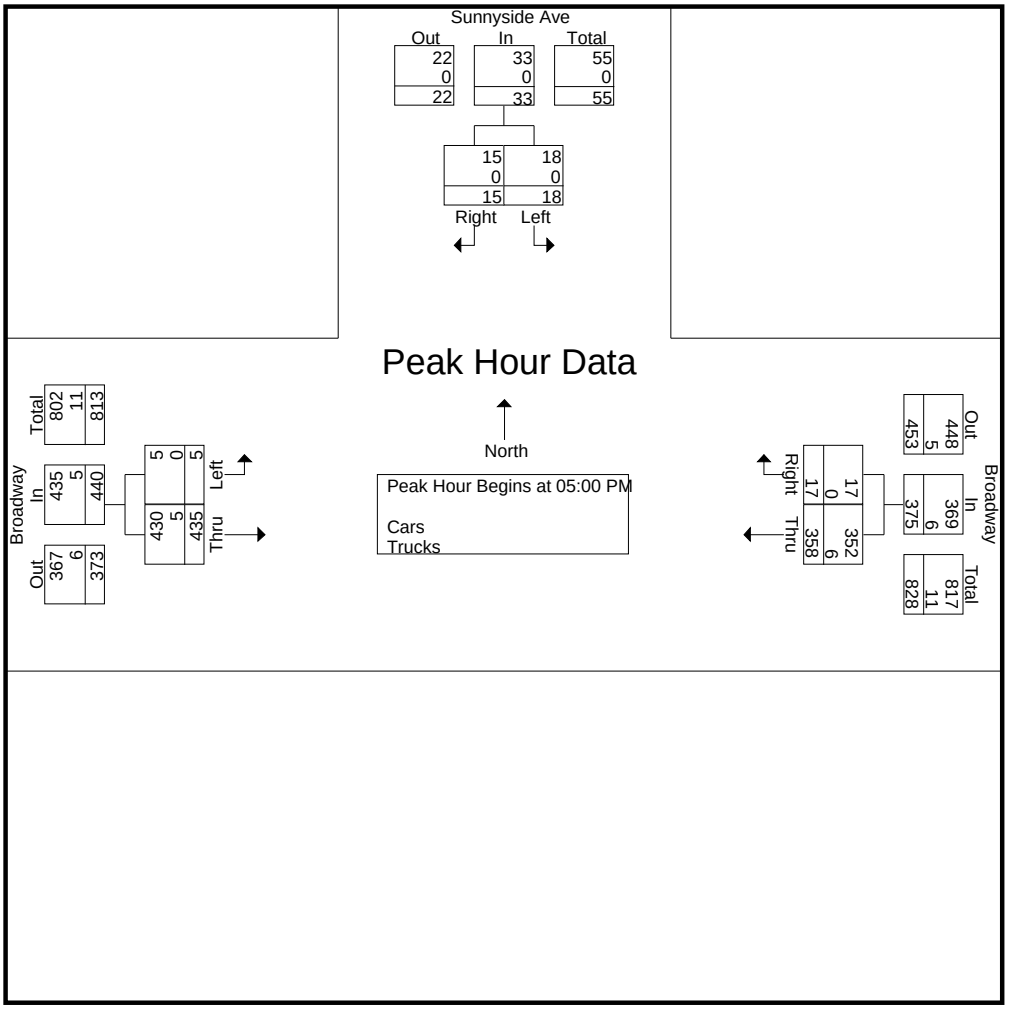
Groups Printed- Cars - Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	1	2	71	1	1	95	171
04:15 PM	7	3	57	4	8	94	173
04:30 PM	2	5	84	2	5	106	204
04:45 PM	4	3	69	6	1	108	191
Total	14	13	281	13	15	403	739
05:00 PM	8	1	86	2	1	98	196
05:15 PM	4	6	81	5	0	125	221
05:30 PM	3	4	89	7	3	115	221
05:45 PM	3	4	102	3	1	97	210
Total	18	15	358	17	5	435	848
Grand Total	32	28	639	30	20	838	1587
Apprch %	53.3	46.7	95.5	4.5	2.3	97.7	
Total %	2	1.8	40.3	1.9	1.3	52.8	
Cars	32	28	627	30	20	828	1565
% Cars	100	100	98.1	100	100	98.8	98.6
Trucks	0	0	12	0	0	10	22
% Trucks	0	0	1.9	0	0	1.2	1.4

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**8**	1	9	86	2	88	1	98	99	196
05:15 PM	4	**6**	**10**	81	5	86	0	**125**	**125**	**221**
05:30 PM	3	4	7	89	**7**	96	**3**	115	118	221
05:45 PM	3	4	7	**102**	3	**105**	1	97	98	210
Total Volume	18	15	33	358	17	375	5	435	440	848
% App. Total	54.5	45.5		95.5	4.5		1.1	98.9		
PHF	.563	.625	.825	.877	.607	.893	.417	.870	.880	.959
Cars	18	15	33	352	17	369	5	430	435	837
% Cars	100	100	100	98.3	100	98.4	100	98.9	98.9	98.7
Trucks	0	0	0	6	0	6	0	5	5	11
% Trucks	0	0	0	1.7	0	1.6	0	1.1	1.1	1.3

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	7	3	**10**	86	2	88	1	108	109
+15 mins.	2	**5**	7	81	5	86	1	98	99
+30 mins.	4	3	7	89	**7**	96	0	**125**	**125**
+45 mins.	**8**	1	9	**102**	3	**105**	**3**	115	118
Total Volume	21	12	33	358	17	375	5	446	451
% App. Total	63.6	36.4		95.5	4.5		1.1	98.9	
PHF	.656	.600	.825	.877	.607	.893	.417	.892	.902
Cars	21	12	33	352	17	369	5	441	446
% Cars	100	100	100	98.3	100	98.4	100	98.9	98.9
Trucks	0	0	0	6	0	6	0	5	5
% Trucks	0	0	0	1.7	0	1.6	0	1.1	1.1

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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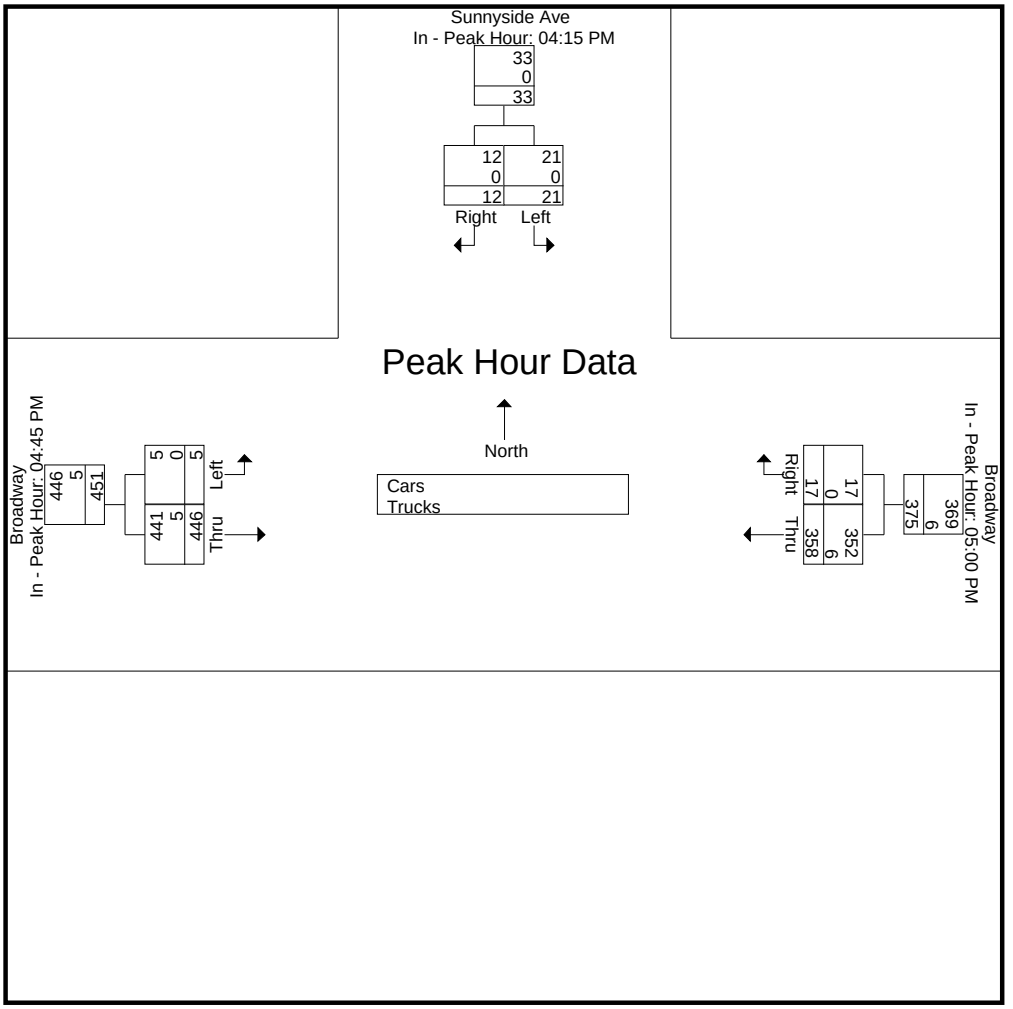

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 4

Groups Printed- Cars

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	1	2	69	1	1	94	168
04:15 PM	7	3	56	4	8	93	171
04:30 PM	2	5	82	2	5	103	199
04:45 PM	4	3	68	6	1	108	190
Total	14	13	275	13	15	398	728
05:00 PM	8	1	84	2	1	96	192
05:15 PM	4	6	80	5	0	123	218
05:30 PM	3	4	88	7	3	114	219
05:45 PM	3	4	100	3	1	97	208
Total	18	15	352	17	5	430	837
Grand Total	32	28	627	30	20	828	1565
Apprch %	53.3	46.7	95.4	4.6	2.4	97.6	
Total %	2	1.8	40.1	1.9	1.3	52.9	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**8**	1	9	84	2	86	1	96	97	192
05:15 PM	4	**6**	**10**	80	5	85	0	**123**	**123**	218
05:30 PM	3	4	7	88	**7**	95	**3**	114	117	**219**
05:45 PM	3	4	7	**100**	3	**103**	1	97	98	208
Total Volume	18	15	33	352	17	369	5	430	435	837
% App. Total	54.5	45.5		95.4	4.6		1.1	98.9		
PHF	.563	.625	.825	.880	.607	.896	.417	.874	.884	.955

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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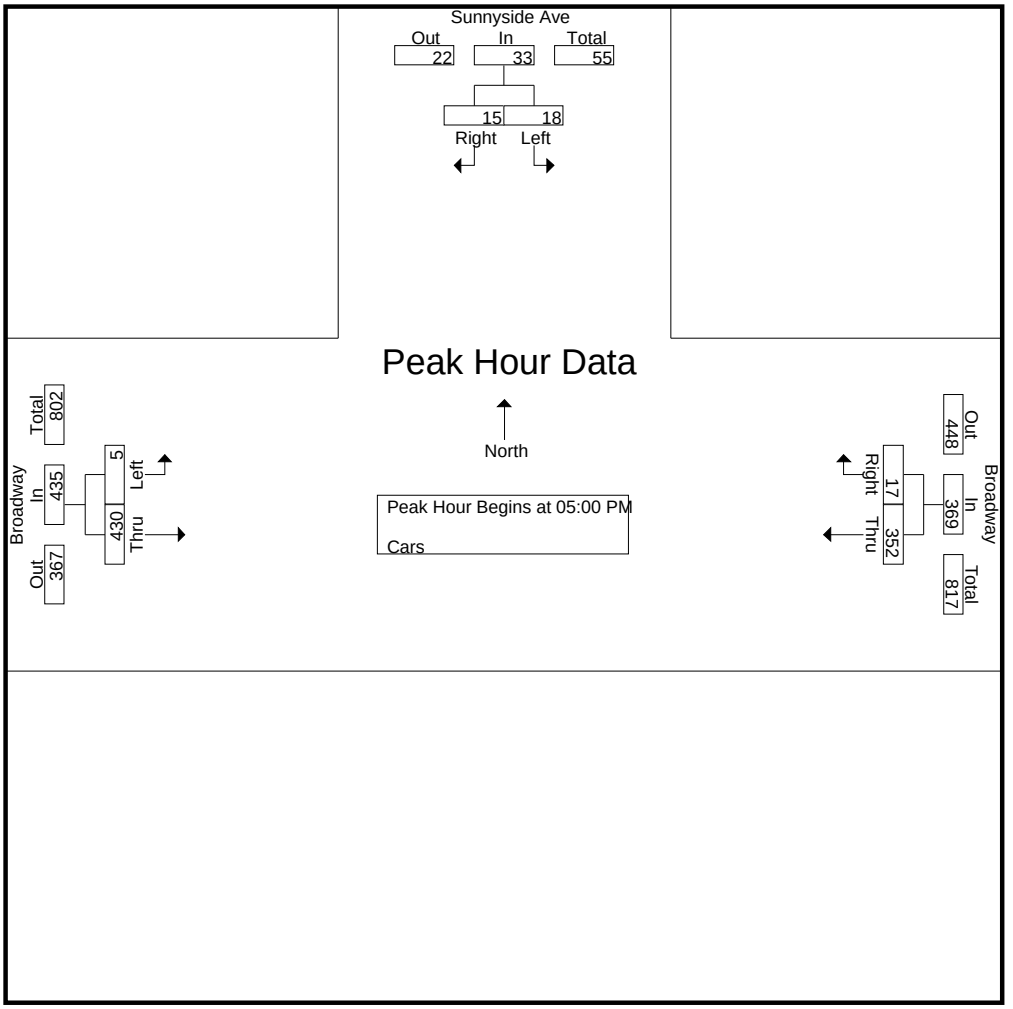
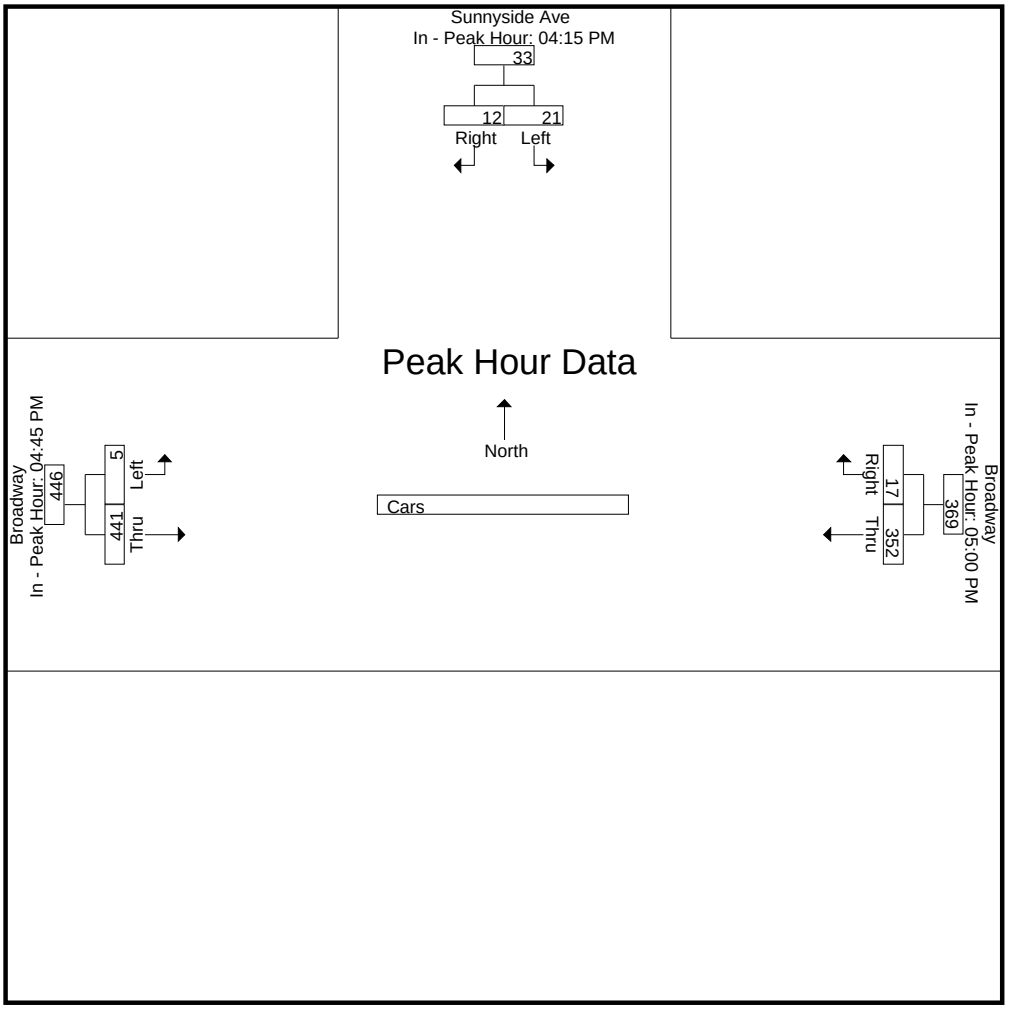


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	7	3	**10**	84	2	86	1	108	109
+15 mins.	2	**5**	7	80	5	85	1	96	97
+30 mins.	4	3	7	88	**7**	95	0	**123**	**123**
+45 mins.	**8**	1	9	**100**	3	**103**	**3**	114	117
Total Volume	21	12	33	352	17	369	5	441	446
% App. Total	63.6	36.4		95.4	4.6		1.1	98.9	
PHF	.656	.600	.825	.880	.607	.896	.417	.896	.907

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 6



N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 7

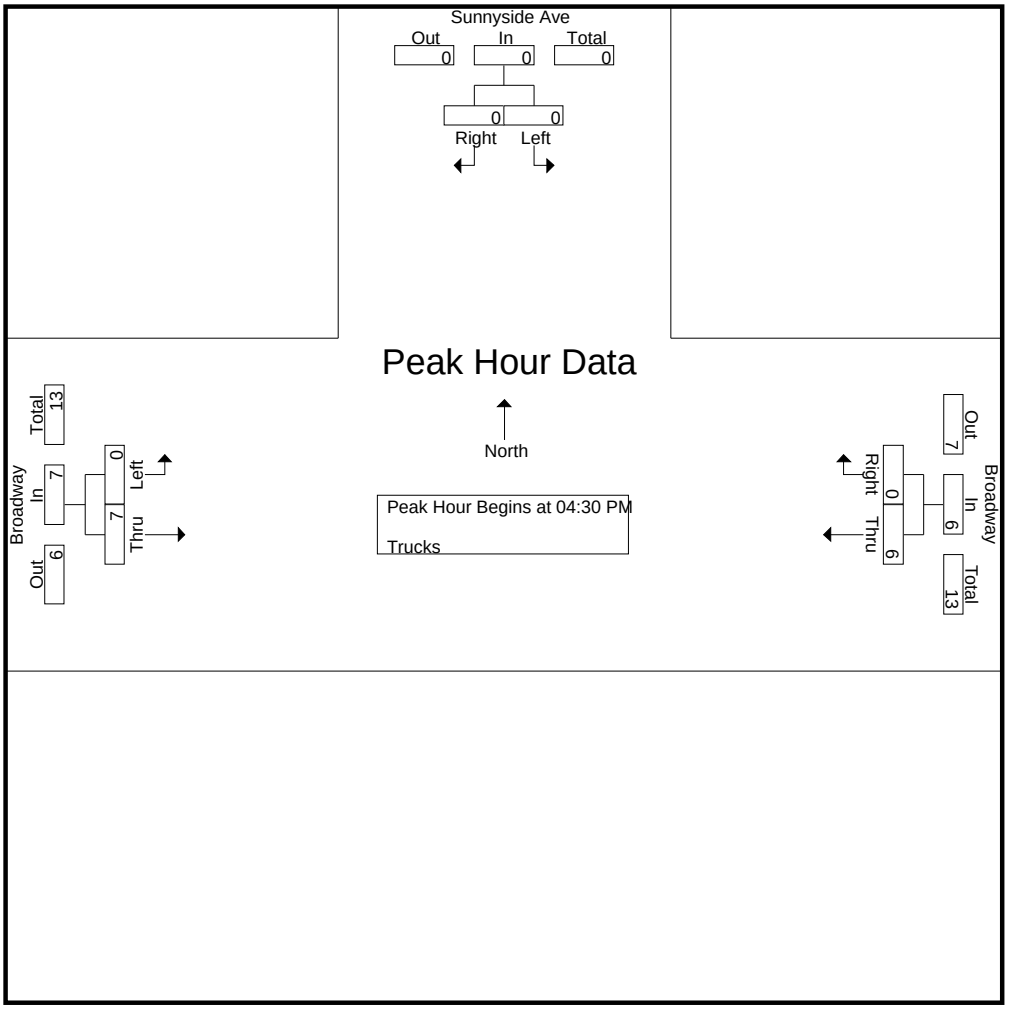
Groups Printed- Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	2	0	0	1	3
04:15 PM	0	0	1	0	0	1	2
04:30 PM	0	0	2	0	0	3	5
04:45 PM	0	0	1	0	0	0	1
Total	0	0	6	0	0	5	11
05:00 PM	0	0	2	0	0	2	4
05:15 PM	0	0	1	0	0	2	3
05:30 PM	0	0	1	0	0	1	2
05:45 PM	0	0	2	0	0	0	2
Total	0	0	6	0	0	5	11
Grand Total	0	0	12	0	0	10	22
Apprch %	0	0	100	0	0	100	
Total %	0	0	54.5	0	0	45.5	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	**2**	0	**2**	0	**3**	**3**	**5**
04:45 PM	0	0	0	1	0	1	0	0	0	1
05:00 PM	0	0	0	2	0	2	0	2	2	4
05:15 PM	0	0	0	1	0	1	0	2	2	3
Total Volume	0	0	0	6	0	6	0	7	7	13
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.750	.000	.750	.000	.583	.583	.650

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 8

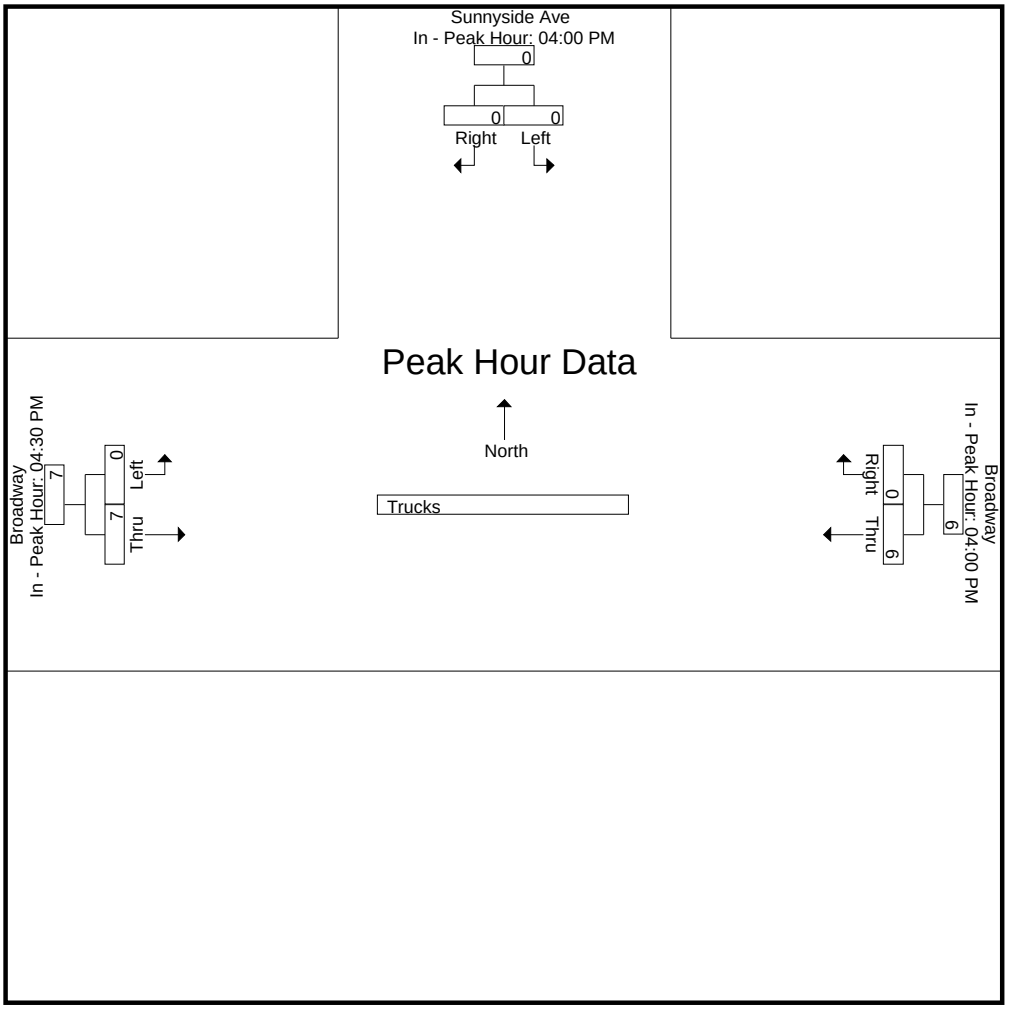


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	0	0	0	**2**	0	**2**	0	**3**	**3**
+15 mins.	0	0	0	1	0	1	0	0	0
+30 mins.	0	0	0	2	0	2	0	2	2
+45 mins.	0	0	0	1	0	1	0	2	2
Total Volume	0	0	0	6	0	6	0	7	7
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.750	.000	.750	.000	.583	.583

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 9



N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 10

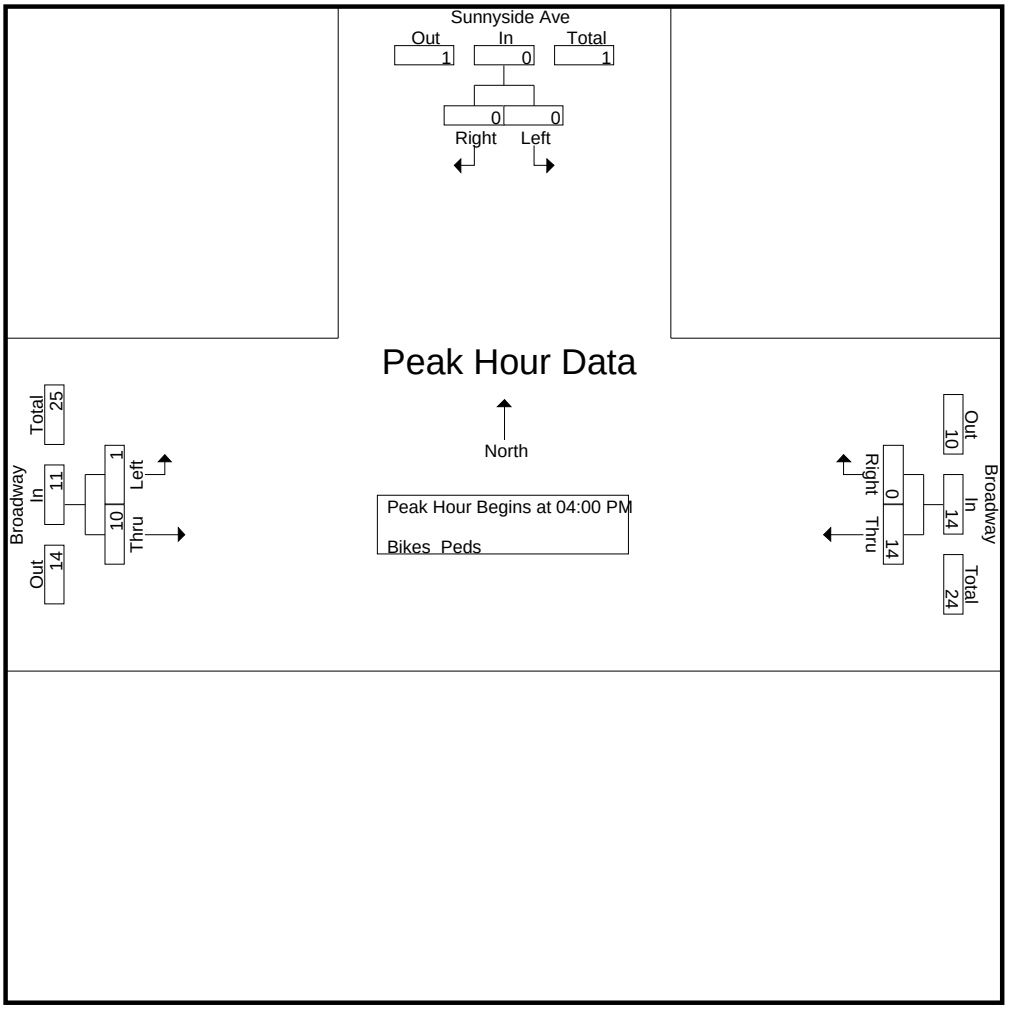
Groups Printed- Bikes Peds

	Sunnyside Ave From North			Broadway From East			Broadway From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	10	4	0	2	1	3	0	12	8	20
04:15 PM	0	0	12	3	0	0	0	2	0	12	5	17
04:30 PM	0	0	9	4	0	0	0	3	3	12	7	19
04:45 PM	0	0	9	3	0	1	0	2	0	10	5	15
Total	0	0	40	14	0	3	1	10	3	46	25	71
05:00 PM	0	0	5	1	0	0	0	6	0	5	7	12
05:15 PM	0	0	3	4	0	1	0	2	0	4	6	10
05:30 PM	0	0	4	1	0	3	1	3	0	7	5	12
05:45 PM	0	0	8	2	0	0	0	1	0	8	3	11
Total	0	0	20	8	0	4	1	12	0	24	21	45
Grand Total	0	0	60	22	0	7	2	22	3	70	46	116
Apprch %	0	0		100	0		8.3	91.7				
Total %	0	0		47.8	0		4.3	47.8		60.3	39.7	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	**4**	0	**4**	**1**	**3**	**4**	**8**
04:15 PM	0	0	0	3	0	3	0	2	2	5
04:30 PM	0	0	0	4	0	4	0	3	3	7
04:45 PM	0	0	0	3	0	3	0	2	2	5
Total Volume	0	0	0	14	0	14	1	10	11	25
% App. Total	0	0		100	0		9.1	90.9		
PHF	.000	.000	.000	.875	.000	.875	.250	.833	.688	.781

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 11

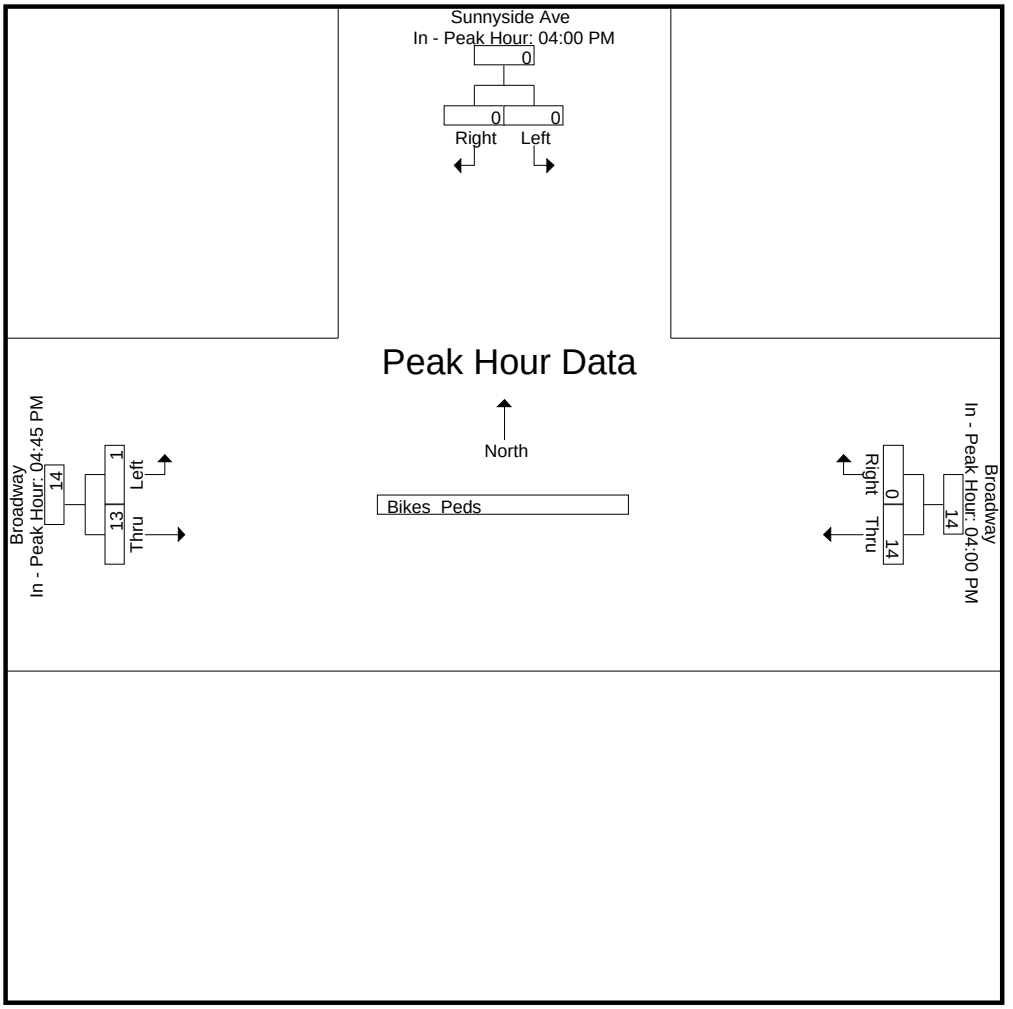


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	0	0	0	**4**	0	**4**	0	2	2
+15 mins.	0	0	0	3	0	3	0	**6**	**6**
+30 mins.	0	0	0	4	0	4	0	2	2
+45 mins.	0	0	0	3	0	3	**1**	3	4
Total Volume	0	0	0	14	0	14	1	13	14
% App. Total	0	0		100	0		7.1	92.9	
PHF	.000	.000	.000	.875	.000	.875	.250	.542	.583

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 12



Appendix B: MassDOT's 2019 Weekday Seasonal Adjustment Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.

Appendix C: Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON/SOMERVILLE COUNT DATE : 11/3/2022

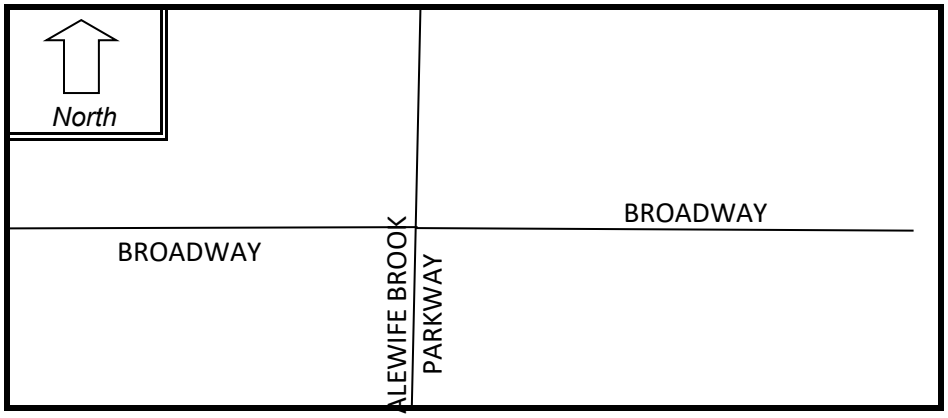
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : ALEWIFE BROOK PARKWAY

MINOR STREET(S) : BROADWAY

INTERSECTION DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	322	456	859	895		2,532

" K " FACTOR : **0.09**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **28,133**

TOTAL # OF CRASHES : 56

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **11.20**

CRASH RATE CALCULATION : **1.09**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : PM Peak used

Project Title & Date: HCA 10 SUNNYSIDE AVENUE

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 11/3/2022

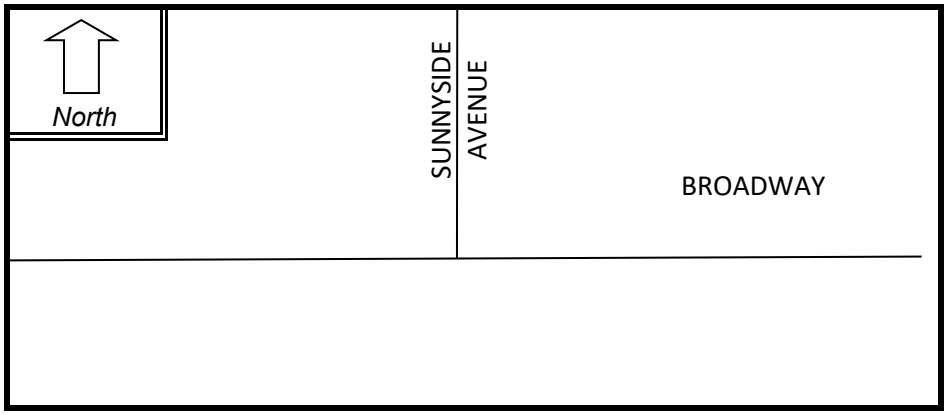
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : BROADWAY

MINOR STREET(S) : SUNNYSIDE AVENUE

INTERSECTION DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	440	375		33		**848**

" K " FACTOR : **0.08** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **10,600**

TOTAL # OF CRASHES : 2 # OF YEARS : 5 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION : **0.10** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments : PM Peak used

Project Title & Date: HCA 10 SUNNYSIDE AVENUE

Appendix D: Capacity Analysis

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	161	11	132	224	48	20	974	77	17	359	74
Future Volume (vph)	112	161	11	132	224	48	20	974	77	17	359	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.992			0.983			0.987			0.976	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3227	0	0	3329	0	0	3302	0	0	3231	0
Flt Permitted		0.982			0.983			0.917			0.692	
Satd. Flow (perm)	0	3227	0	0	3329	0	0	3031	0	0	2240	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	375	0	0	534	0	0	1281	0	0	561	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		2	2		6	6	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

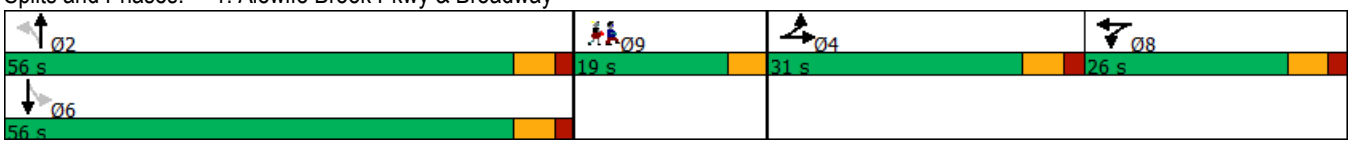
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		18.9			20.0			50.0			50.0	
Actuated g/C Ratio		0.15			0.16			0.40			0.40	
v/c Ratio		0.77			1.00			1.06			0.63	
Control Delay		62.0			90.2			80.2			35.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		62.0			90.2			80.2			35.0	
LOS		E			F			F			D	
Approach Delay		62.0			90.2			80.2			35.0	
Approach LOS		E			F			F			D	
90th %ile Green (s)	24.8	24.8		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
70th %ile Green (s)	21.2	21.2		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
50th %ile Green (s)	18.9	18.9		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	16.6	16.6		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	13.5	13.5		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		264			349			915			355	
Fuel Used(gal)		6			12			28			8	
CO Emissions (g/hr)		407			819			1935			549	
NOx Emissions (g/hr)		79			159			376			107	
VOC Emissions (g/hr)		94			190			448			127	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		154			227			~601			191	
Queue Length 95th (ft)		166			#284			#737			233	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		643			536			1209			889	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	

Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.58			1.00			1.06			0.63	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 126			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 70.4		Intersection LOS: E	
Intersection Capacity Utilization 78.4%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 131.8			
70th %ile Actuated Cycle: 128.2			
50th %ile Actuated Cycle: 125.9			
30th %ile Actuated Cycle: 123.6			
10th %ile Actuated Cycle: 120.5			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	458	299	2	13	13
Future Volume (Veh/h)	5	458	299	2	13	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	12	482	336	4	20	24
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	359				882	376
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				778	187
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	97
cM capacity (veh/h)	1196				299	706

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	494	340	44
Volume Left	12	0	20
Volume Right	0	4	24
cSH	1196	1700	436
Volume to Capacity	0.01	0.20	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.3	0.0	14.2
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	14.2
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	119	250	16	175	256	25	4	776	103	19	729	147
Future Volume (vph)	119	250	16	175	256	25	4	776	103	19	729	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.992			0.989			0.983			0.973	
Flt Protected		0.985			0.983						0.999	
Satd. Flow (prot)	0	3364	0	0	3350	0	0	3291	0	0	3259	0
Flt Permitted		0.985			0.983			0.946			0.745	
Satd. Flow (perm)	0	3364	0	0	3350	0	0	3113	0	0	2430	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	135	275	24	216	356	44	8	982	124	28	767	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	434	0	0	616	0	0	1114	0	0	972	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

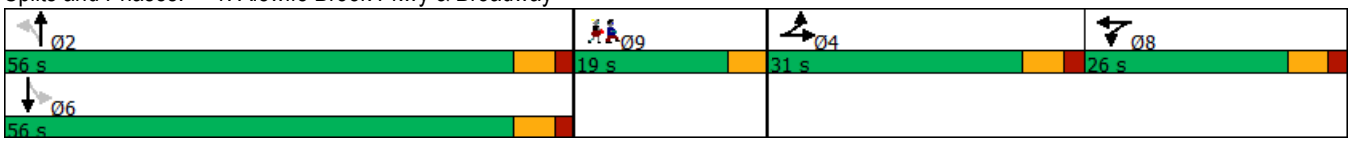
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.4			20.0			50.0			50.0	
Actuated g/C Ratio		0.16			0.16			0.39			0.39	
v/c Ratio		0.80			1.16			0.91			1.02	
Control Delay		63.1			139.2			48.1			72.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		63.1			139.2			48.1			72.7	
LOS		E			F			D			E	
Approach Delay		63.1			139.2			48.1			72.7	
Approach LOS		E			F			D			E	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	23.2	23.2		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	20.7	20.7		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	18.3	18.3		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Hold	Hold		Max	Max	
10th %ile Green (s)	15.0	15.0		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Hold	Hold		Max	Max	
Stops (vph)		358			375			770			772	
Fuel Used(gal)		8			18			17			23	
CO Emissions (g/hr)		556			1235			1196			1598	
NOx Emissions (g/hr)		108			240			233			311	
VOC Emissions (g/hr)		129			286			277			370	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		182			~317			449			~448	
Queue Length 95th (ft)		242			#318			471			#613	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		663			530			1229			954	
Starvation Cap Reductn		0			0			0			0	

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.65			1.16			0.91			1.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 127.4			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 75.7		Intersection LOS: E	
Intersection Capacity Utilization 77.6%		ICU Level of Service D	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 132			
70th %ile Actuated Cycle: 130.2			
50th %ile Actuated Cycle: 127.7			
30th %ile Actuated Cycle: 125.3			
10th %ile Actuated Cycle: 122			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	435	358	17	23	19
Future Volume (Veh/h)	5	435	358	17	23	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	12	500	407	28	41	31
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	458				991	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270				899	281
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				83	95
cM capacity (veh/h)	1081				248	614

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	512	435	72
Volume Left	12	0	41
Volume Right	0	28	31
cSH	1081	1700	334
Volume to Capacity	0.01	0.26	0.22
Queue Length 95th (ft)	1	0	20
Control Delay (s)	0.3	0.0	18.7
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	18.7
Approach LOS			C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	185	13	152	258	55	23	1120	89	20	413	85
Future Volume (vph)	129	185	13	152	258	55	23	1120	89	20	413	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.992			0.983			0.987			0.977	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3226	0	0	3329	0	0	3302	0	0	3234	0
Flt Permitted		0.982			0.983			0.886			0.603	
Satd. Flow (perm)	0	3226	0	0	3329	0	0	2928	0	0	1954	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Adj. Flow (vph)	157	250	24	211	335	69	41	1302	129	28	516	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	431	0	0	615	0	0	1472	0	0	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

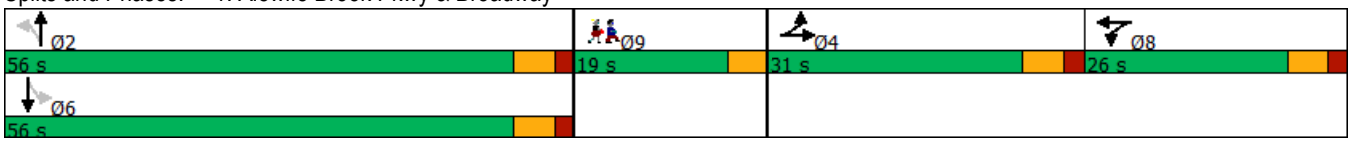
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.9			20.0			50.0			50.0	
Actuated g/C Ratio		0.16			0.16			0.39			0.39	
v/c Ratio		0.81			1.16			1.28			0.84	
Control Delay		64.2			139.6			166.5			47.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		64.2			139.6			166.5			47.7	
LOS		E			F			F			D	
Approach Delay		64.2			139.6			166.5			47.7	
Approach LOS		E			F			F			D	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	24.0	24.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	21.4	21.4		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	18.9	18.9		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	15.4	15.4		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		306			380			982			447	
Fuel Used(gal)		7			18			53			11	
CO Emissions (g/hr)		478			1262			3710			740	
NOx Emissions (g/hr)		93			246			722			144	
VOC Emissions (g/hr)		111			292			860			172	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		182			~317			~820			254	
Queue Length 95th (ft)		191			#355			#932			296	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		634			528			1150			764	
Starvation Cap Reductn		0			0			0			0	

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.68			1.16			1.28			0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 127.9			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 123.1		Intersection LOS: F	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 132			
70th %ile Actuated Cycle: 131			
50th %ile Actuated Cycle: 128.4			
30th %ile Actuated Cycle: 125.9			
10th %ile Actuated Cycle: 122.4			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	527	344	2	15	15
Future Volume (Veh/h)	6	527	344	2	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	14	555	387	4	23	28
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	410				1010	427
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217				923	237
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				91	96
cM capacity (veh/h)	1138				243	657

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	569	391	51
Volume Left	14	0	23
Volume Right	0	4	28
cSH	1138	1700	371
Volume to Capacity	0.01	0.23	0.14
Queue Length 95th (ft)	1	0	12
Control Delay (s)	0.3	0.0	16.2
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	16.2
Approach LOS			C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	288	18	201	294	29	5	892	119	22	838	169
Future Volume (vph)	137	288	18	201	294	29	5	892	119	22	838	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.992			0.989			0.983			0.973	
Flt Protected		0.985			0.983						0.999	
Satd. Flow (prot)	0	3364	0	0	3350	0	0	3291	0	0	3259	0
Flt Permitted		0.985			0.983			0.887			0.642	
Satd. Flow (perm)	0	3364	0	0	3350	0	0	2919	0	0	2094	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	156	316	27	248	408	51	10	1129	143	32	882	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	499	0	0	707	0	0	1282	0	0	1118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

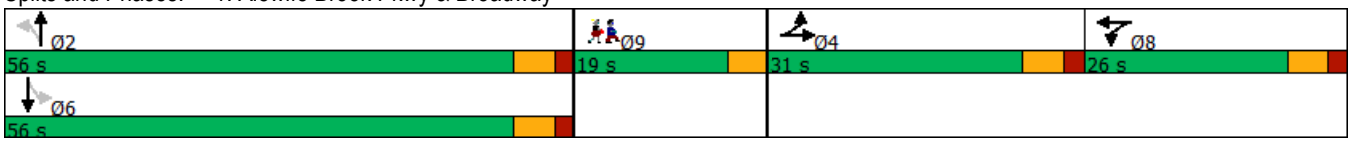
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		22.3			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.15			0.39			0.39	
v/c Ratio		0.85			1.35			1.13			1.38	
Control Delay		66.4			213.2			106.5			212.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		66.4			213.2			106.5			212.2	
LOS		E			F			F			F	
Approach Delay		66.4			213.2			106.5			212.2	
Approach LOS		E			F			F			F	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	23.7	23.7		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	21.0	21.0		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
10th %ile Green (s)	17.3	17.3		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
Stops (vph)		417			402			851			785	
Fuel Used(gal)		9			28			32			55	
CO Emissions (g/hr)		663			1961			2207			3839	
NOx Emissions (g/hr)		129			381			429			747	
VOC Emissions (g/hr)		154			454			512			890	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		214			~416			~665			~664	
Queue Length 95th (ft)		280			#390			#653			#812	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		653			522			1136			809	
Starvation Cap Reductn		0			0			0			0	

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.76			1.35			1.13			1.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 129.4			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.38			
Intersection Signal Delay: 154.6		Intersection LOS: F	
Intersection Capacity Utilization 87.1%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 132			
70th %ile Actuated Cycle: 132			
50th %ile Actuated Cycle: 130.7			
30th %ile Actuated Cycle: 128			
10th %ile Actuated Cycle: 124.3			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	500	412	20	23	22
Future Volume (Veh/h)	6	500	412	20	23	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	14	575	468	33	41	35
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	524				1134	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	342				1065	350
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				79	94
cM capacity (veh/h)	1013				196	559

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	589	501	76
Volume Left	14	0	41
Volume Right	0	33	35
cSH	1013	1700	280
Volume to Capacity	0.01	0.29	0.27
Queue Length 95th (ft)	1	0	27
Control Delay (s)	0.4	0.0	22.6
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	22.6
Approach LOS			C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	131	187	15	152	259	55	24	1120	89	20	413	86
Future Volume (vph)	131	187	15	152	259	55	24	1120	89	20	413	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.991			0.983			0.987			0.976	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3222	0	0	3329	0	0	3302	0	0	3230	0
Flt Permitted		0.982			0.983			0.876			0.602	
Satd. Flow (perm)	0	3222	0	0	3329	0	0	2895	0	0	1949	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Adj. Flow (vph)	160	253	27	211	336	69	43	1302	129	28	516	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	440	0	0	616	0	0	1474	0	0	646	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

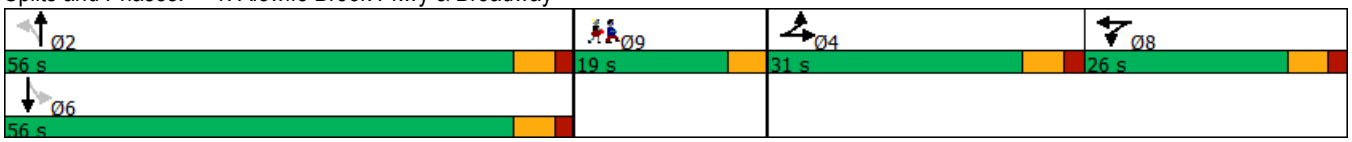
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		21.2			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.16			0.39			0.39	
v/c Ratio		0.82			1.17			1.30			0.85	
Control Delay		64.7			141.4			174.6			48.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		64.7			141.4			174.6			48.3	
LOS		E			F			F			D	
Approach Delay		64.7			141.4			174.6			48.3	
Approach LOS		E			F			F			D	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	24.5	24.5		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	21.8	21.8		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	19.2	19.2		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	15.7	15.7		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		311			381			972			448	
Fuel Used(gal)		7			18			55			11	
CO Emissions (g/hr)		489			1276			3852			745	
NOx Emissions (g/hr)		95			248			749			145	
VOC Emissions (g/hr)		113			296			893			173	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		186			~320			~832			257	
Queue Length 95th (ft)		195			#355			#940			297	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		631			527			1135			760	
Starvation Cap Reductn		0			0			0			0	

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.70			1.17			1.30			0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 128.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay: 127.3		Intersection LOS: F	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 132			
70th %ile Actuated Cycle: 131.5			
50th %ile Actuated Cycle: 128.8			
30th %ile Actuated Cycle: 126.2			
10th %ile Actuated Cycle: 122.7			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	527	344	4	21	19
Future Volume (Veh/h)	8	527	344	4	21	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	19	555	387	8	32	35
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	414				1022	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222				937	239
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				86	95
cM capacity (veh/h)	1134				237	655

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	574	395	67
Volume Left	19	0	32
Volume Right	0	8	35
cSH	1134	1700	356
Volume to Capacity	0.02	0.23	0.19
Queue Length 95th (ft)	1	0	17
Control Delay (s)	0.5	0.0	17.5
Lane LOS	A		C
Approach Delay (s)	0.5	0.0	17.5
Approach LOS			C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	10	5	8	30	0
Future Volume (Veh/h)	0	10	5	8	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	5	9	33	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	52	33	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52	33	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	959	1046	1592			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	14	33
Volume Left	0	5	0
Volume Right	11	0	0
cSH	1046	1592	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.5	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	2.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	10	5	8	30	0
Future Volume (Veh/h)	0	10	5	8	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	5	9	33	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	52	33	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52	33	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	959	1046	1592			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	14	33
Volume Left	0	5	0
Volume Right	11	0	0
cSH	1046	1592	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.5	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	2.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	289	20	201	296	29	7	892	119	22	838	171
Future Volume (vph)	139	289	20	201	296	29	7	892	119	22	838	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.991			0.989			0.983			0.972	
Flt Protected		0.985			0.983			0.999			0.999	
Satd. Flow (prot)	0	3361	0	0	3350	0	0	3288	0	0	3255	0
Flt Permitted		0.985			0.983			0.844			0.639	
Satd. Flow (perm)	0	3361	0	0	3350	0	0	2778	0	0	2082	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	158	318	30	248	411	51	14	1129	143	32	882	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	506	0	0	710	0	0	1286	0	0	1120	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

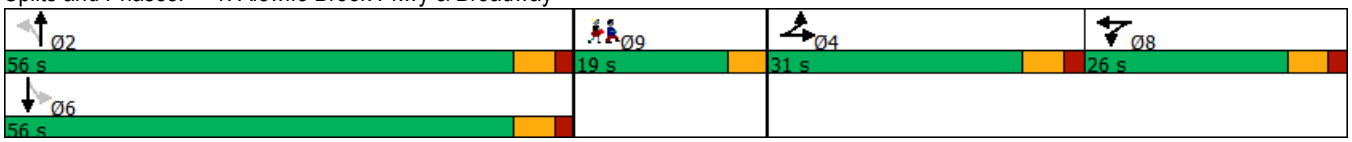
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		22.6			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.15			0.39			0.39	
v/c Ratio		0.86			1.36			1.19			1.39	
Control Delay		66.9			216.4			131.5			217.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		66.9			216.4			131.5			217.8	
LOS		E			F			F			F	
Approach Delay		66.9			216.4			131.5			217.8	
Approach LOS		E			F			F			F	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	24.1	24.1		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	21.4	21.4		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
10th %ile Green (s)	17.6	17.6		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
Stops (vph)		421			403			831			781	
Fuel Used(gal)		10			28			37			56	
CO Emissions (g/hr)		674			1992			2567			3928	
NOx Emissions (g/hr)		131			388			499			764	
VOC Emissions (g/hr)		156			462			595			910	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		217			~421			~698			~672	
Queue Length 95th (ft)		283			#393			#681			#816	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		651			521			1079			803	
Starvation Cap Reductn		0			0			0			0	

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.78			1.36			1.19			1.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 132			
Actuated Cycle Length: 129.6			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay: 165.8		Intersection LOS: F	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			
90th %ile Actuated Cycle: 132			
70th %ile Actuated Cycle: 132			
50th %ile Actuated Cycle: 131.1			
30th %ile Actuated Cycle: 128.4			
10th %ile Actuated Cycle: 124.6			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Alewife Brook Pkwy & Broadway



Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	500	412	26	28	25
Future Volume (Veh/h)	5	500	412	26	28	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	12	575	468	43	50	40
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	534				1134	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	354				1066	355
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				75	93
cM capacity (veh/h)	1003				196	555

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	587	511	90
Volume Left	12	0	50
Volume Right	0	43	40
cSH	1003	1700	275
Volume to Capacity	0.01	0.30	0.33
Queue Length 95th (ft)	1	0	34
Control Delay (s)	0.3	0.0	24.3
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	24.3
Approach LOS			C

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	8	10	26	20	0
Future Volume (Veh/h)	0	8	10	26	20	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	11	28	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	72	22	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	22	22			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	926	1055	1593			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	39	22
Volume Left	0	11	0
Volume Right	9	0	0
cSH	1055	1593	1700
Volume to Capacity	0.01	0.01	0.01
Queue Length 95th (ft)	1	1	0
Control Delay (s)	8.4	2.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.4	2.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

Roster of Development Team

Development Team- 10 Sunnyside Avenue, Arlington

Project Sponsor: Housing Corporation of Arlington (HCA)
Primary Contact: Erica Schwartz, Executive Director
https://www.housingcorparlington.org

The Housing Corporation of Arlington (HCA) was founded in 1986 to address rising real estate prices and the lack of affordable housing in the Town of Arlington. Today, HCA provides and advocates for decent, affordable housing for low- and moderate-income families and individuals in Arlington and surrounding communities, while promoting social and economic diversity. HCA envisions a vibrant, economically diverse Arlington that offers a wide range of affordable housing that blends into the community. HCA housing is safe, attractive, environmentally sound, and affordable in perpetuity. HCA envisions a community of resident leaders who engage in the civic conversation to make our town more affordable and inclusive. HCA's members drive this vision. Members include tenants, homeowners, congregations, businesses, and others who invest time, money, and other resources to keep our town diverse and stable.

Relevant Low Income Housing Tax Credit Experience:

PROJECT	YEAR COMPLETED	NUMBER OF UNITS
Capital Square	2013	32
Downing Square/Broadway Initiative	2022	48

Development Consultant: Gabby Geller Consulting LLC
Primary Contact: Gabby Geller, Owner
gabbygellerconsultingllc.com

Gabby Geller has more than 25 years of experience as an affordable housing and community development professional. Over that time, Gabby has worked through complex planning, policy, financing, and real estate challenges. Ms. Geller's direct project management portfolio features over 2000 units of primarily affordable but also, mixed-income, mixed-use housing. Ms. Geller has frequently on projects with a strong public private partnership component.

Design Team: Utile Design
Primary Contact: Nick Buehrens
https://www.utiledesign.com

Utile is a Boston-based design firm built like a think tank. We thrive on solving complex problems in intelligent and pragmatic ways. From theoretical issues that frame policy to the practical implementation of architectural commissions, Utile develops a rigorous research-based approach for finding the best solutions. Utile believes that multifamily housing must provide basic shelter but should also create a sense of community. Multifamily urban housing is a microcosm of the city and should engender all the vibrant interaction of its residents as happens in the larger community. The key to designing a healthy community is to create the proper balance of public and private spaces. Mixed uses in a residential context are an excellent opportunity to enrich these relationships between the residents and the neighborhood by creating more complete daily use patterns and points of contact between residents.

General Contractor: Bald Hill Builders, LLC
Primary Contact: Sean Whalen
https://baldhillbuilders.com

Bald Hill Builders was founded in 2004 and is a certified Women-owned Enterprise. Bald Hill Builders supports the development of affordable and sustainable housing to attract and retain a diverse population; stabilize and strengthen neighborhoods; and support workforce housing through the construction and rehabilitation of affordable housing construction projects. BHB believes construction funds should remain in the communities in which we work, providing economic opportunities to a diverse local workforce and material suppliers.

Local Zoning Attorney: Krattenmaker O'Connor & Ingber P.C.
Primary Contact: Mary Winstanley O'Connor, Esq.
www.koilaw.com

Transactional Attorney: KJP Partners LLP
Primary Contact: Kurt A. James, Esquire
www.kjppartners.com

Civil Engineer: Samiotes Consultants, Inc.
Primary Contact: Stephen Garvin
https://samiotes.com

Landscape Architect: Offshoots, Inc.
Primary Contact: Kate Kennen, RLA
www.offshootsinc.com

Office of the
Board of Assessors
Robbins Memorial Town Hall
Arlington, MA 02476
(781) 316-3050
Assessors@town.arlington.ma.us

Abutters List

Date: October 25, 2022

Subject Property Address: 10 SUNNYSIDE AVE Arlington, MA
Subject Property ID: 50-8-1.B

Search Distance: 300 Feet

The Board of Assessors certifies the names and addresses of requested parties in interest, all abutters and owners of land directly opposite on any public or private street or way and owners of land within 300 feet of the property lines of subject property.

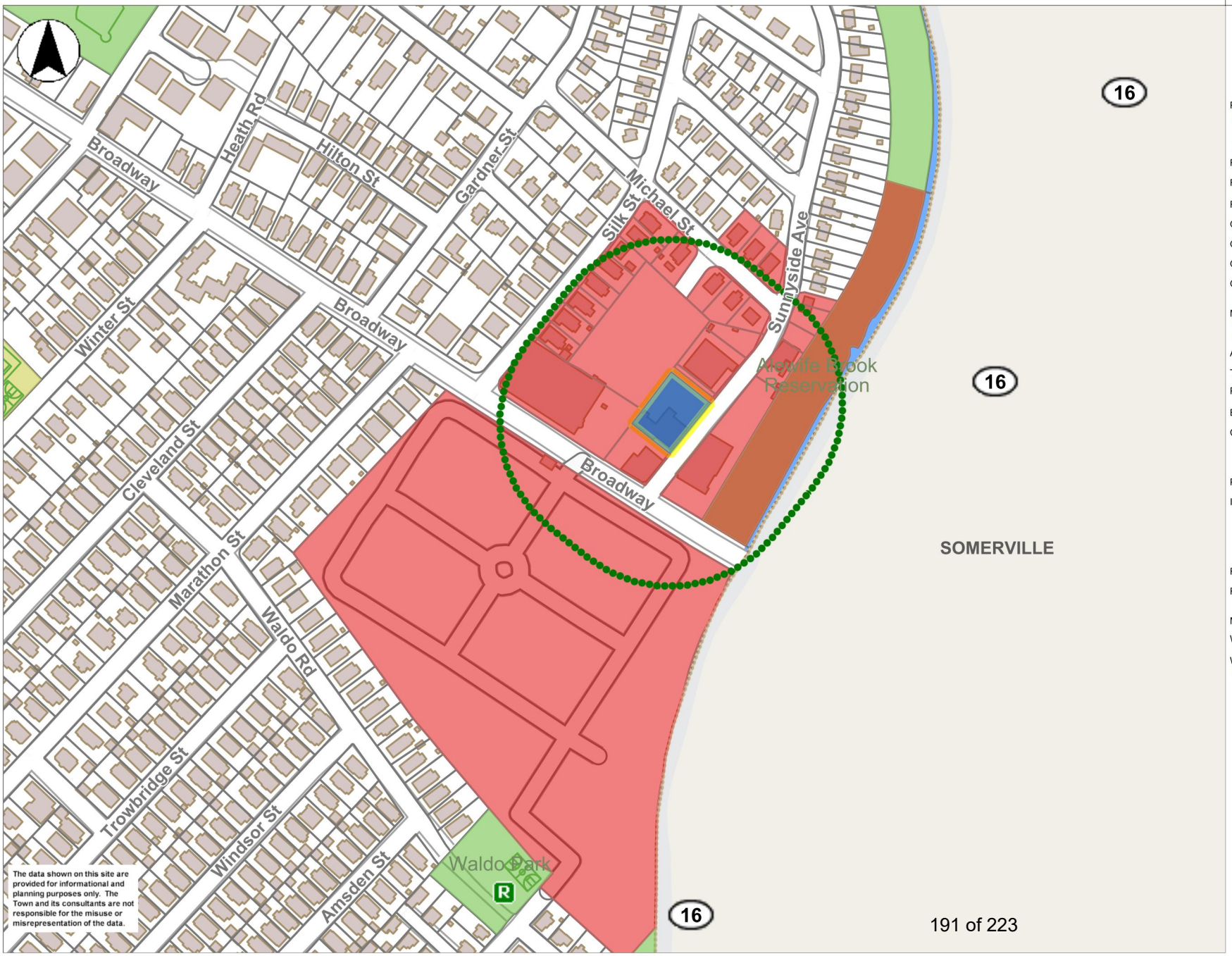
BOARD OF ASSESSORS
TOWN HALL
ARLINGTON, MA 02476

Board of Assessors

Please see enclosed map for any abutting property within 300 feet that is in another city or town.

ABUTTERS' LIST
Date: October 25, 2022
Subject Property Location: 10 SUNNYSIDE AVE Arlington, MA
Subject Property ID: 33-2-2.B
Search Distance: 300 Feet

Parcel ID	Property Location	Owner 1	Owner 2	Mailing Address 1	Mailing Address 2	City/Town	State	Zip
33.A-2-11	27 SILK ST	GERARD BAUDOUIN		27 SILK ST		ARLINGTON	MA	02474
33.A-2-12	29 SILK ST	WILLIS BRYAN J ETAL/ TRUSTEES	GRIMALDI WILLIS FAMILY TRUST	29 SILK ST		ARLINGTON	MA	02474
33.A-2-19.1	19 SILK ST UNIT 1	CYRAN PETER J & BRITTANY A		95 BIG WOOD DRIVE		WESTFIELD	MA	01805
33.A-2-19.2	19 SILK ST UNIT 2	LARAQUI JAWAD & MEGAN		21 SILK ST UNIT 2		ARLINGTON	MA	02474
33-6-1	0-LOT BROADWAY	DEPT/CONSERVATION & RECREATION	WATER SUPPLY PROTECTION DIV	20 SOMERSET ST		BOSTON	MA	02108
26-6-16.A	30 BROADWAY	CATHOLIC CEMETARY ASSOC	ARCHDIOCESE OF BOSTON	100 CUMMINGS CTR	SUITE 421F	BEVERLY	MA	01915
33-2-1	22 SUNNYSIDE AVE	22-26 SUNNYSIDE AVENUE LLC		22 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-2-1.B	0-LOT SUNNYSIDE AVE	MIRAK JOHN TR	YUKON REALTY TRUST	P.O. BOX 268		ARLINGTON	MA	02476
33-2-1.C	0-LOT SUNNYSIDE AVE	22-26 SUNNYSIDE AVENUE LLC		22 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-2-2.A	0-LOT SUNNYSIDE AVE	MIRAK JOHN TR	YUKON REALTY TRUST	P.O. BOX 268		ARLINGTON	MA	02476
33-2-2.B	**10 SUNNYSIDE AVE**	**MB REALTY GROUP LLC**		**339 MASS AVE**		**ARLINGTON**	**MA**	**02474**
33-2-3	19-23 BROADWAY	KENTURY VENTURES LLC		23 BROADWAY		ARLINGTON	MA	02474
33-2-5.A	33 BROADWAY	ARLINGTON CENTER GARAGE &	SERVICE CORP	438 MASS AVE	SUITE 127	ARLINGTON	MA	02474
33-2-5.B	0-LOT BROADWAY	ARLINGTON CENTER GARAGE &	SERVICE CORP	P.O. BOX 268		ARLINGTON	MA	02476
33-2-8	15-17 SILK ST	KEPKA JOANNA ASIA	DOWLING LYNN	15 SILK STREET		ARLINGTON	MA	02474
33-2-10	23-25 SILK ST	HOOD PETER A & MARIA C		25 SILK ST		ARLINGTON	MA	02474
33-2-12	31-33 SILK ST	LIM MIKA	MCLAUGHLIN MARK ETAL	33 SILK ST		ARLINGTON	MA	02474
33-2-13	37 SILK ST	BARRY-SMITH CHRISTOPHER	BARRY-SMITH LORI A	37 SILK STREET		ARLINGTON	MA	02474
33-2-14	41 SILK ST	MAHONEY WILLIAM D		41 SILK ST		ARLINGTON	MA	02474
33-2-15	43 SILK ST	OLIVEIRA HORACIO & MARIA M	LIFE ESTATE	43 SILK ST		ARLINGTON	MA	02474
33-2-16	27 MICHAEL ST	SULLIVAN PHILIP/ETAL	MOCCIA JUDITH TRUSTEES	27 MICHAEL STREET	ENDICOTT REAL ESTATE TRUST	ARLINGTON	MA	02474
33-2-17.A	35 MICHAEL ST	MCCARTNEY MARY ELLEN ETAL/ TRS	MCCARTNEY CHAPLIN REALTY TRUST	35 MICHAEL ST		ARLINGTON	MA	02474
33-2-18	39 MICHAEL ST	LIENDO KARINA FABIOLA ETAL/ TRS	ACOSTA LIENDO TRUST	39 MICHAEL STREET		ARLINGTON	MA	02474
33-2-19	43 MICHAEL ST	CROWLEY PRISCILLA		43 MICHAEL STREET		ARLINGTON	MA	02474
33-3-1	25 SUNNYSIDE AVE	BOYLE DAVID T/TRUSTEE	D & B REALTY TRUST	16 SHORT STREET		BROWNFIELD	ME	04010
33-3-2	1 BROADWAY	BAYSTATE CONDOMINIUMS LLC		956 MASS AVE		LEXINGTON	MA	02420
33-3-4	0-LOT SUNNYSIDE AVE	BOYLE DAVID T/TRUSTEE	D & B REALTY TRUST	16 SHORT STREET		BROWNFIELD	ME	04010
33-3-5	35 SUNNYSIDE AVE	JOSEPH REGINE C		28 CRANMORE LN		MELROSE	MA	02176
33-3-6	37 SUNNYSIDE AVE	KIM SUNGHEE	LEE JOSEPF	37 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-4-5.A	36 MICHAEL ST	HUTCHINSON DAVID/ELEANOR	TRS/DAH-EJH REALTY TRUST	36 MICHAEL ST		ARLINGTON	MA	02474
33-4-6	40 MICHAEL ST	HAN LU	YANG MEILING	40 MICHAEL ST		ARLINGTON	MA	02474
33-4-7	44 MICHAEL ST	CABRE MIQUEL MUNOZ &	BRODER LEAH	44 MICHAEL ST		ARLINGTON	MA	02474



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Printed on 10/25/2022 at 08:42 AM

REQUEST FOR SPECIAL PERMIT

TOWN OF ARLINGTON

In the matter of the Application of 10 Sunnyside Avenue to the Zoning Board of Appeals for the Town of Arlington:

Application for a Special Permit is herewith made, in accordance with Section 3.3 of the Zoning Bylaw of the Town of Arlington, Massachusetts, seeking relief from the following specific provisions of the Zoning Bylaw, and as described fully in the attached form, *Special Permit Criteria*:

10 Sunnyside Avenue seeks zoning relief via Chapter 40 B for the following requirements: Section 5 Subsection 5.3.17, Section 5, Table 5.5.2.A, Section 5, Subsection 5.3.21.A.2.D, By-law Section 6, Subsection 6.1.2 and the Bicyle Parking Design Guidelines, Buy-Law Section 6, Subsection 6.1.4, By-law Section 6, Subsection 6.1.11 (c)(11), By-law Section 6, Subsection 6.1.11(c)(3), By law Section 6, Subsection 6.1.11(D)(1)-(6), By-law Section 5, Subsection 5.3.7(A) and (B), Title IX, Article 3, Sections 4A and 4BEnvforcement and Fees and Comprehensive Permit Requirement for Statement on impact on Municipal Facilities.

The Applicant states he/she/they is/are the owner/occupant of the land in Arlington located at 10 Sunnyside Avenue with respect to such relief is sought; that no unfavorable action has been taken by the Zoning Board of Appeals upon a similar petition regarding this property within the two (2) years next immediately prior to the filing hereof. The applicant expressly agrees to full compliance with any and all conditions and qualifications imposed upon this permission, whether by the Zoning Bylaw or by the Zoning Board of Appeals, should the same be granted. The Applicant represents that the grounds for the relief sought are as follows:

10 Sunnyside Avenue seeks zoning relief via Chapter 40 B for the following requirements: Section 5 Subsection 5.3.17, Section 5, Table 5.5.2.A, Section 5, Subsection 5.3.21.A.2.D, By-law Section 6, Subsection 6.1.2 and the Bicyle Parking Design Guidelines, Buy-Law Section 6, Subsection 6.1.4, By-law Section 6, Subsection 6.1.11 (c)(11), By-law Section 6, Subsection 6.1.11(c)(3), By law Section , Subsection 6.1.11(D)(1)-(6), By-law Section 5, Subsection 5.3.7(A) and (B), Title IX, Article 3, Sections 4A and 4BEnvforcement and Fees and Comprehensive Permit Requirement for Statement on impact on Municipal Facilities.

E-Mail: eschwarz@housingcorparlington.org Signed: _____ Date: 3/20/2023

Telephone: 781-859-5294 ext. 1 Address: 252 Massachusetts Avenue, Arlington, MA 02474

Special Permit Criteria: Per Section 3.3.3 of the Zoning Bylaw, a Special Permit shall only be granted upon the Board's determination that the benefits of the proposed project will outweigh its adverse effects. The responses provided below will inform the Board as to whether the standards for approval have been met.

A). Indicate where the requested use is listed in the Table of Use Regulations as allowed by Special Permit in the district for which the application is made or is so designated elsewhere in the Zoning Bylaw.

See attached Comprehensive Permit Drawing set dated 3/9/2023 prepared by Utile Design

B). Explain why the *requested use is essential or desirable to the public convenience or welfare.*

See attached Impact Analysis Report stating how 10 Sunnyside Avenue is adherent to the Housing and Master Plans of the Town of Arlington

C). Explain why *the requested use will not create undue traffic congestion, or unduly impair pedestrian safety.*

See attached Traffic Impact Study prepared by Nitsch Engineering

D). Explain why *the requested use will not overload any public water, drainage or sewer system, or any other municipal system to such an extent that the requested use or any developed use in the immediate area or any other area of the Town will be unduly subjected to hazards affecting health, safety or the general welfare.*

See Impact Analysis Report prepared by Samiotes Consultants, Inc.

E). Describe how any special regulations for the use, as may be provided in the Zoning Bylaw, including but not limited to the provisions of Section 8 are fulfilled.

See attached Impact report provided by Samiotes Consultants, Inc.

F). Explain why the requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health or welfare.

See attached Impact report provided by Samiotes Consultants, Inc.

G). Explain why *the requested use will not, by its addition to a neighborhood, cause an excess of the use that could be detrimental to the character of said neighborhood*.

See attached Impact report provided by Samiotes Consultants, Inc.

3). Describe how desirable relief may be granted without substantial detriment to the public good.

See attached Impact Analysis Report prepared by Samiotes Consultants, Inc.

4). Describe how desirable relief may be granted … without nullifying or substantially derogating from the intent or purpose of the Zoning Bylaw of the Town of Arlington, Massachusetts.

See attached Impact Analysis Report prepared by Samiotes Consultants, Inc.

State Law (MGL Chapter 40a, Section 10) requires that the Zoning Board of Appeals must find that all four (4) criteria are met in order to be authorized to grant a Variance. If any one of the standards is not met, the Board must deny the Variance.

TOWN OF ARLINGTON
Open Space / Gross Floor Area Information
For Applications to the Zoning Board of Appeals

Refer to Section 2: *Definitions*, and Section 5: *District Regulations* in the Zoning Bylaw of the Town of Arlington before completing this form.

Address: 10 Sunnyside Avenue **Zoning District:** B4

OPEN SPACE*	**EXISTING**	**PROPOSED**
Total lot area	16,500 sf	16,500 sf
Open Space, Usable	none	2,000 sf
Open Space, Landscaped	none	1,500 sf

* Refer to the Definitions in Section 2 of the Zoning Bylaw.

GROSS FLOOR AREA (GFA) †		
Accessory Building	n/a	n/a
Basement or Cellar (meeting the definition of Story, excluding mechanical use areas)	2,700 sf	n/a
1st Floor	5,253 sf	3,408 sf
2nd Floor	270 sf	11,520 sf
3rd Floor	n/a	11,520 sf
4th Floor	n/a	11,520 sf
5th Floor	n/a	11,038 sf
Attic (greater than 7'-0" in height, excluding elevator machinery, or mechanical equipment)	n/a	n/a
Parking garages (except as used for accessory parking or off-street loading purposes)	n/a	n/a
All weather habitable porches and balconies	n/a	2,000 sf
Total Gross Floor Area (GFA)	8,223 sf	49,006 sf

† Refer to Definition of Gross Floor Area in Section 2 and Section 5 of the Zoning Bylaw.

REQUIRED MINIMUM OPEN SPACE AREA		
Landscaped Open Space (Sq. Ft.)	4,900 sf	1,500 sf
Landscaped Open Space (% of GFA)	10%	3%
Usable Open Space (Sq. Ft.)	9,801 sf	2,000 sf
Usable Open Space (% of GFA)	20%	4%

This worksheet applies to plans dated 3/9/2023 designed by Utile Design

Reviewed with Building Inspector: _____ Date: _____

TOWN OF ARLINGTON
Dimensional and Parking Information
For Applications to the Zoning Board of Appeals

1. Property Location: 10 Sunnyside Avenue Zoning District: B4

2. Present Use/Occupancy: Automotive/Vacant No. of dwelling units 0

3. Existing Gross Floor Area (refer to Section 5.3.22 of the Zoning Bylaw and provide supporting documentation [worksheet and drawings] showing dimensions of GFA by floor):
8,223 Sq. Ft.

4. Proposed Use/Occupancy: Multi-family residential No. of dwelling units 43

5. Proposed Gross Floor Area (refer to Section 5.3.22 of the Zoning Bylaw and provide supporting documentation [worksheet and drawings] showing dimensions of GFA by floor):
49,006 Sq. Ft.

		Present Conditions	Proposed Conditions	Min. or max Required by Zoning
6.	Lot size (Sq. Ft.)	16,500	16,500	min. no requirement
7.	Frontage (Ft.)	150	150	min. 50
8.	Floor area ratio	0.28	2.97	max. 3.00
9.	Lot Coverage (%)	28%	81%	max no requirement
10.	Lot Area per Dwelling Unit (Sq. Ft.)	0	384	min. no requirement
11.	Front Yard Depth (Ft.)	4.2 to 5	2 to 4	min. 0
12.	Left Side Yard Depth (Ft.)	1 to 8.7	5.5	min. 0
13.	Right Side Yard Depth (Ft.)	81.7 to 118.8	5.5 to 12.25	min. 0
14.	Rear Yard Depth (Ft.)	0.4 to 60	5.5	min. 10+(L/10)
15.	Height (Stories)	1	5	max. 5
16.	Height (Ft.)	unknown	58.167	max. 60
17.	Landscaped Open Space (Sq. Ft.) Refer to Section 2 in the Zoning Bylaw.	none	1,500	
17A.	Landscaped Open Space (% of GFA)	none	3%	min. 10%
18.	Usable Open Space (Sq. Ft.) Refer to Section 2 in the Zoning Bylaw.	none	2,000	
18A.	Usable Open Space (% of GFA)	none	4%	min. 20%
19.	Number of Parking Spaces	unknown	21	min. 0.25 / DU
20.	Parking area setbacks (if applicable)	none	N/A	min. N/A
21.	Number of Loading Spaces (if applicable)	none	N/A	min. no requirement
22.	Type of construction	unknown	5A over 1A	N/A
23.	Slope of proposed roof(s) (in. per ft.)	unknown	1/4":1'	min. no requirement

10 SUNNYSIDE AVE. COMPREHENSIVE PERMIT

INDEX OF DRAWINGS

ZONING SUMMARY

REGULATIONS	REF. SECTION	ALLOWED	PROPOSED	RELIEF REQUESTED
LOT AREA MIN.	Table 5.5.2.A	No Requirement	16,500 sf	N
LOT AREA MIN. PER UNIT	Table 5.5.2.A	No Requirement	N/A	N
LOT FRONTAGE MIN.	Table 5.5.2.A	50'	132'	N
FRONT SETBACK	Table 5.5.2.B	0'	2' to 10'	N
SIDE SETBACK	Table 5.5.2.B	0'	5'-6" and 12'	N
REAR SETBACK	Table 5.5.2.B	10+(L/10)	5'-6"	Y
SCREENING & BUFFERING	Sec. 5.3.21.A.1	Not Required	N/A.Site does not abut residential lots, not subject to screening requirements	N
SCREENING FOR OFFSTREET PARKING	Sec. 5.3.21.A.2	Not Required per 6.1.11.C	N/A.All parking is within building, not subject to screening requirements	N
UPPER- STORY STEPBACKS	Sec. 5.3.21.A.2. C	7.5' required above the third story	6' and 3' stepbacks for part of L5, otherwise none	Y
OPEN SPACE	Sec. 5.2.2.B and 5.3.21.A.2.D	Min. 10% Landscape and 20% Usable Open Space	1,500 Landscape and 2,000 sf Usable Open Space	Y
FAR	Sec. 5.5.2B Amendment, June 2022	3	2.97	N
BUILDING HEIGHT	Table 5.5.2.B	60' / 5 stories	60' / 5 stories	N
PARKING MIN.	Sec. 6.1.5	0.25 spaces per DU	0.49	N
LONG-TERM BIKE PARKING MIN.	Sec. 6.1.12	1.5 /DU and 0.3 /1000 gsf Office	37 (65 required)	Y
SHORT-TERM BIKE PARKING MIN.	Sec. 6.1.12	0.1/DU and 0.5/1000 gsf Office	6 (5 required)	Y
SURFACE PARKING LOT SETBACK	Sec. 6.1.11.D	10' front and 5' sides and rear with fence	10' front and 5'-6" to 12' sides	Y

NOTE: Refer to formal waiver request prepared by project attorney for additional detail.

AREA SUMMARY

LEVEL	GSF	1-BR	2-BR	3-BR	NON-RESIDENTIAL PROGRAM
SITE AREA	16500				
GROUND FLOOR	3408	0	0	0	OFFICE AND MEETING RM (278 SF), COMMERCIAL/OFFICE (608 SF) AND PARKING
SECOND FLOOR	11520	3	5	2	COMMUNITY ROOM (727 SF)
THIRD FLOOR	11520	4	5	2	
FOURTH FLOOR	11520	4	5	2	
FIFTH FLOOR	11038	5	5	1	
TOTAL	49006	16	20	7	

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474
PROJECT

Housing Corporation of Arlington
252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.859.5294 F 000 000.0000
OWNER

utile
ARCHITECTURE + URBAN DESIGN
115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200 F 617 423.1414
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ARCHITECT

SAMIOTES CONSULTANTS INC.
20 A STREET
FRAMINGHAM, MA 01701
P 508.877.6688
CIVIL

BF&A
17 BRIAN ROAD
LANCASTER, MA 01523
P 978.870.4301
CODE

BLW ENGINEERS
311 GREAT ROAD
P.O. BOX #1551
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P 978.486.4301
M/E/P/FP

STAMP

DATE	ISSUE / REVISION
03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE

UTILE PROJECT NUMBER 2244

COVER SHEET

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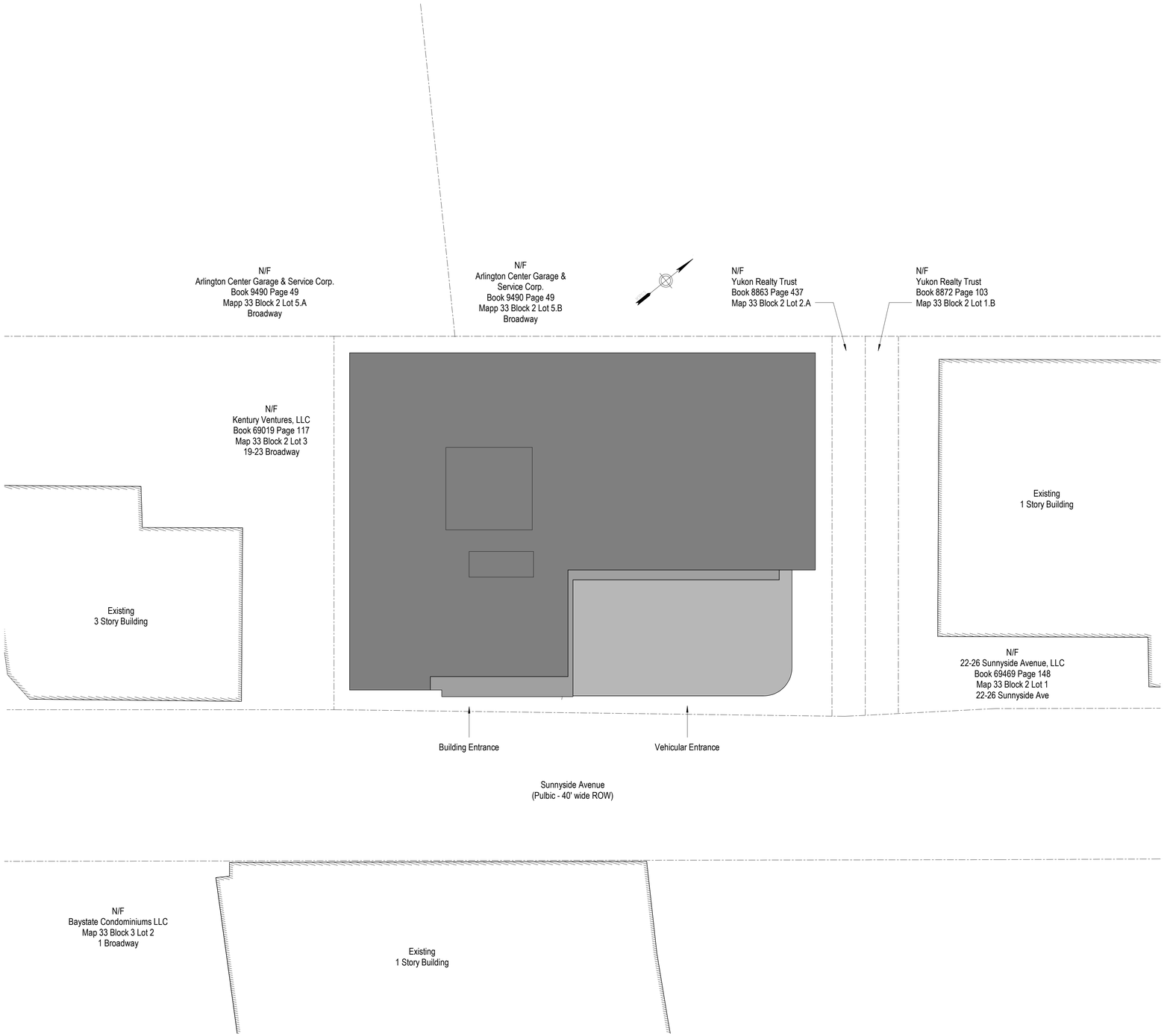

1 Locus Plan - 100ft
1/16" = 1'-0"

10 SUNNYSIDE AVE.

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REVISIONS ON SHEET

SCALE **1/16" = 1'-0"**
UTILE PROJECT NUMBER **2244**

LOCUS MAP

G0.01

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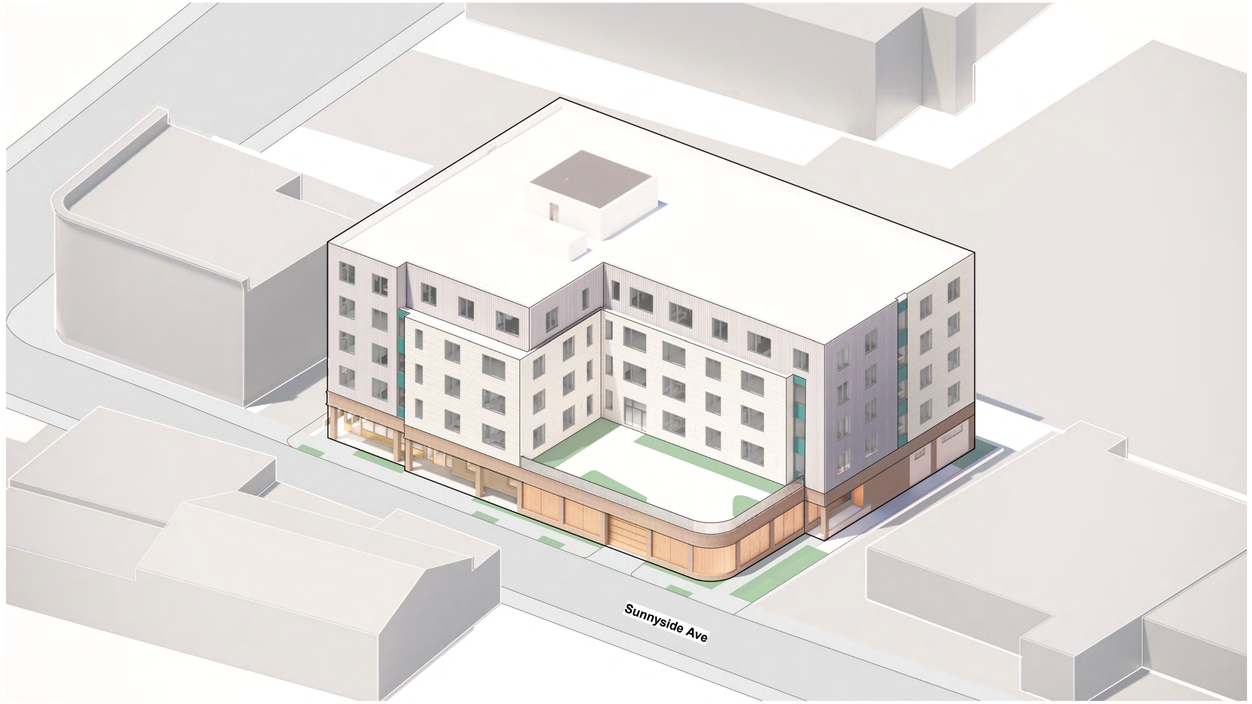

2 Rendering - Axon
1/4" = 1'-0"

1 Rendering - Elevational Perspective
1/4" = 1'-0"

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REVISIONS ON SHEET

SCALE **1/4" = 1'-0"**
UTILE PROJECT NUMBER **2244**

BUILDING RENDERINGS

G0.02

3/9/2023 11:13:19 AM

2 Rendering - View Down Sunnyside
1/4" = 1'-0"

1 Rendering - Broadway at Sunnyside
1/4" = 1'-0"

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03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE 1/4" = 1'-0"
UTILE PROJECT NUMBER 2244

BUILDING RENDERINGS

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PREPARED FOR:

HOUSING CORPORATION OF ARLINGTON

252 MASSACHUSETTS AVENUE

ARLINGTON, MA 02474

PROJECT TITLE:

ALTA/NSPS LAND TITLE SURVEY

10 SUNNYSIDE AVENUE

ARLINGTON, MA

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Designed By:	Drawn By:	Checked By:
---	MWC	CDE
Issue Date:	Project No:	Scale:
9/09/2022	078306	1" = 10'

Drawing No.:

SHEET 1 OF 2

File: V:\PROJECTS\AN\Y\K6\078306.000\09_DESIGN\SURVEY\ALTA_078306.DWG

GENERAL NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN HEREON IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA CONSULTING, INC. IN AUGUST OF 2022.

2. ALL DEED REFERENCES ARE TO SOUTH MIDDLESEX COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.

3. LOCUS OWNER OF RECORD:

   MB REALTY GROUP, LLC
   DEED BOOK 73883 PAGE 259
   MAP 33 BLOCK 2 LOT 2.B

4. TOPOGRAPHY, CONTOURS AND BENCHMARKS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). TEMPORARY BENCHMARKS, REFERENCED TO THE DATUM ARE INDICATED ON THE SURVEY.

IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.

5. THE PROJECT AREA IS LOCATED IN FLOOD ZONE "X" AREAS OF MINIMAL FLOODING AS SHOWN ON FLOOD INSURANCE RATE MAP FOR MIDDLESEX COUNTY, COMMUNITY PANEL NUMBER 25017C0417E, EFFECTIVE DATE JUNE 4, 2010.

6. THE LOCUS PARCEL IS LOCATED IN THE TOWN OF ARLINGTON B4 DISTRICT (VEHICULAR ORIENTED BUSINESS) AS DEFINED BY THE TOWN OF ARLINGTON ZONING MAP.

7. LOCATION OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE AND ADDITIONAL UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. LOCATIONS ARE COMPILED FROM UTILITY PLANS OF RECORD AND DIG-SAFE FIELD MARKINGS. RIM AND INVERT INFORMATION HAS BEEN COMPILED AND FIELD VERIFIED WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. PRIOR TO ANY CONSTRUCTION, CONTACT DIG-SAFE (811) TO FIELD VERIFY LOCATION OF ALL UTILITIES.

8. PLAN REFERENCES:

   PLAN #354 OF 1957
   PLAN #415 OF 1947
   PLAN #723 OF 1955
   PLAN BOOK 3202 PAGE END

9. THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION AND BELIEF, FORMULATED IN ACCORDANCE WITH COMMONLY ACCEPTED PROCEDURES CONSISTENT WITH APPLICABLE STANDARDS OF PRACTICE, AND AS SUCH IT CONSTITUTES NEITHER A GUARANTEE NOR WARRANTY, EITHER EXPRESS OR IMPLIED. THE CERTIFICATIONS SHOWN ARE NOT CERTIFICATIONS TO THE TITLE OR OWNERSHIP OF THE PROPERTIES SHOWN.

10. NO TREES OF 8" OR GREATER CALIPER WERE FOUND ON THE SITE.

RECORD DESCRIPTION: OFFICE NO. T99957A

LOT A SHOWN ON PLAN ENTITLED "LAND IN ARLINGTON, MASS., OWNED BY GRACE S. RUSSELL"; DATED OCTOBER 25, 1905 BY DANA E. PERKINS, SURVEYOR, RECORDED WITH SAID DEEDS, BOOK 3202, PAGE END, EXCLUDING A 10 FOOT WIDE STRIP OF LAND ON THE NORTHEASTERLY SIDE OF LOCUS AS SET FORTH IN DEED OF ADLER M. B. HANSON ET AL, DATED NOVEMBER 29, 1956, RECORDED WITH MIDDLESEX COUNTY (SOUTHERN DISTRICT) REGISTRY OF DEEDS, BOOK 8863, PAGE 437.

ARLINGTON ASSESSOR'S PARCEL ID NO. 33-2-2.B

LEGEND:

- BUILDING LINE
- PARCEL BOUNDARY LINE
- ADJOINING PARCEL LINE
- STREET/HIGHWAY LINE
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- FENCE LINE
- ELECTRIC LINE
- GAS LINE
- OVERHEAD UTILITY LINE
- SEWER LINE
- DRAINAGE LINE
- WATER LINE
- WATER VALVE
- HYDRANT
- ROUND CATCH BASIN
- SQUARE CATCH BASIN
- STORM MANHOLE
- GAS VALVE
- SEWER MANHOLE
- UTILITY POLE
- EXCEPTION
- ENCROACHMENT
- PINE TREE
- DECIDUOUS TREE

SURVEY CERTIFICATION

FIDELITY NATIONAL TITLE INSURANCE COMPANY OFFICE NUMBER T99957A; DATED AUGUST 10, 2022.

THIS SURVEY IS MADE FOR THE BENEFIT OF:
MB REALTY GROUP, LLC TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, **FIDELITY NATIONAL TITLE INSURANCE COMPANY** TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, **HOUSING CORPORATION OF ARLINGTON** TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, **MASSDOCS LANDERS** TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, LIFE INSURANCE COMMUNITY INVESTMENT INITIATIVE, LLC TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 8, 9, 11, 11(a), 13, 17 & 18 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED IN AUGUST OF 2022.

THERE IS NO EVIDENCE OF CEMETERIES.

THE LEGAL DESCRIPTION FORMS A MATHEMATICALLY CLOSED FIGURE WITHOUT GAPS, GORES OR OVERLAPS.

THE PROPERTY HAVE DIRECT ACCESS TO SUNNYSIDE AVENUE, BEING A DEDICATED PUBLIC STREET.

THERE IS NO EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

THERE IS NO EVIDENCE OF USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

THE PREMISES SHOWN ON THE SURVEY IS THE SAME PROPERTY DESCRIBED IN EXHIBIT A OF THE TITLE COMMITMENT.

_____
WILLIAM J. DORGAN, PROFESSIONAL LAND SURVEYOR NO. 49622
DATE:

FIDELITY NATIONAL TITLE INSURANCE COMPANY,
OFFICE NUMBER: T99957A
SCHEDULE B PART 2
EFFECTIVE DATE: AUGUST 10, 2022

1. RIGHTS OR CLAIMS OF PERSONS IN POSSESSION. **(NOT SURVEY RELATED)**

2. EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS, BOUNDARY-LINE DISPUTES, OVERLAPS, ENCROACHMENTS, TITLE TO FILLED LANDS (IF ANY) AND ANY MATTERS NOT OF RECORD WHICH WOULD BE DISCLOSED BY AN ACCURATE SURVEY AND INSPECTION OF THE PREMISES. **(SEE THIS SURVEY WITH RESPECT TO ENCROACHMENTS)**

3. ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR OR MATERIAL, HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS. **(NOT SURVEY RELATED)**

4. ANY DEFECT, LIEN, ENCUMBRANCES, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I-REQUIREMENTS ARE MET. **(NOT SURVEY RELATED)**

5. LIENS FOR TAXES AND MUNICIPAL CHARGES WHICH BECOME DUE AND PAYABLE SUBSEQUENT TO THE DATE OF SAID POLICY. **(NOT SURVEY RELATED)**

6. TAKING BY THE TOWN OF ARLINGTON FOR CONSTRUCTING, MAINTAINING AND OPERATING WATER WORKS, DATED AUGUST 5, 1946, RECORDED WITH SAID DEEDS, BOOK 7029, PAGE 223. SEE ALSO PLAN NO. 1177 OF 1946, RECORDED WITH SAID DEEDS, BOOK 7029, PAGE 223. **(SEE THIS SURVEY)**

7. ORDER OF TAKING BY THE TOWN OF ARLINGTON FOR THE LAYOUT OF SUNNYSIDE AVENUE, DATED APRIL 25, 1955, RECORDED WITH SAID DEEDS, BOOK 8456, PAGE 138. SEE ALSO PLAN NO. 723 OF 1955, RECORDED WITH SAID DEEDS, BOOK 8456, PAGE 138. **(SEE THIS SURVEY)**

8. DECISION BY THE TOWN OF ARLINGTON ZONING BOARD OF APPEALS, RECORDED WITH SAID DEEDS, BOOK 78503, PAGE 1. **(NOT SURVEY RELATED)**

POTENTIAL ENCROACHMENTS: (1)

(1) CHAIN-LINK FENCE CROSSES OVER PROPERTY LINE 0' TO 0.4'.

(2) RETAINING WALL CROSSES OVER PROPERTY LINE 0.8'.

(3) BIT. CURB CROSSES OVER PROPERTY LINE 0' TO 0.4'.

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PREPARED FOR:

HOUSING CORPORATION OF ARLINGTON

252 MASSACHUSETTS AVENUE

ARLINGTON, MA 02474

PROJECT TITLE:

ALTA/NSPS LAND TITLE SURVEY

10 SUNNYSIDE AVENUE

ARLINGTON, MA

No.	Submittal / Revision	App'd.	By	Date
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Designed By:	Drawn By:	Checked By:
---	MWC	CDE
Issue Date:	Project No:	Scale:
9/09/2022	078306	1" = 10'

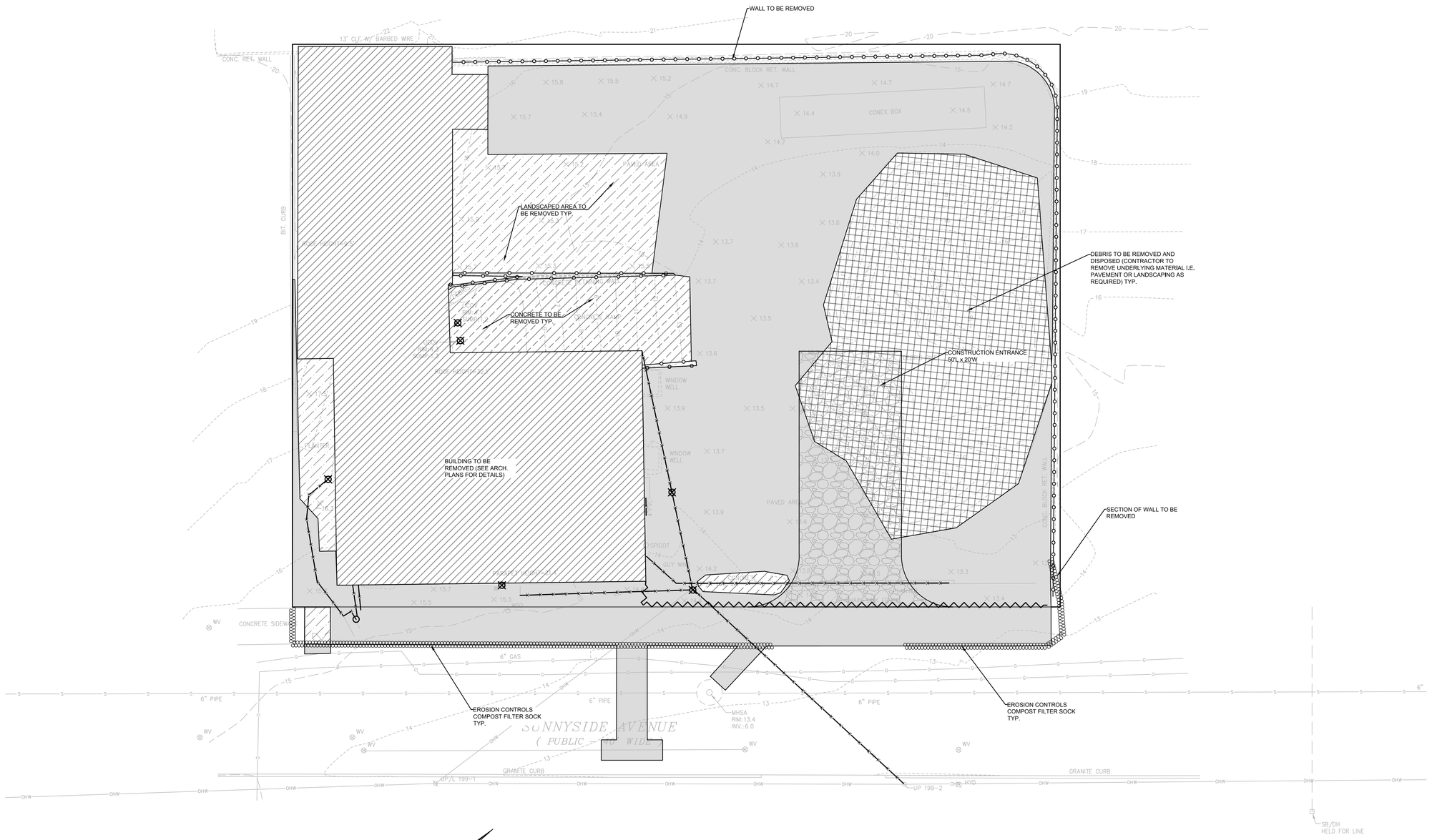
Drawing No.:

SHEET 2 OF 2

File: V:\PROJECTS\ANY\X6\078306.000\09_DESIGN\SURVEY\ALTA_078306.DWG

DEMOLITION LEGEND:

- BUILDING TO BE REMOVED
- BITUMINOUS CONCRETE TO BE REMOVED/PULVERIZED
- DEBRIS TO BE CLEARED
- CEMENT CONCRETE TO BE REMOVED
- AREA OF LOAM REMOVAL
- FENCE REMOVAL
- WALL TO BE REMOVED
- UTILITIES LINE TO BE REMOVED
- LIMIT OF WORK
- EROSION CONTROL
- UTILITIES STRUCTURE TO BE REMOVED
- UTILITIES STRUCTURE TO BE ABANDONED IN PLACE



NOTE:
THE CONTRACTOR SHALL PHASE ALL DEMOLITION AND REMOVAL WORK TO ALLOW FOR THE CONTINUING OPERATION OF ALL STRUCTURES OUTSIDE OF LIMIT OF WORK.

NOTE:
DRAWING DOES NOT SHOW ENTIRE SCOPE OF DEMO. IT IS INTENDED TO AID CONTRACTOR WITH IDENTIFYING WORK AND IS NOT ALL INCLUSIVE.

10 5 0 10 20

1 inch = 10 feet

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DATE	ISSUE / REVISION
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REVISIONS ON SHEET

SCALE: 1" = 10'
UTILE PROJECT NUMBER: Arlington, MA

SITE PREPARATION AND EROSION CONTROL PLAN

C1.00

11/8/2022 1:21:43 PM

LEGEND:

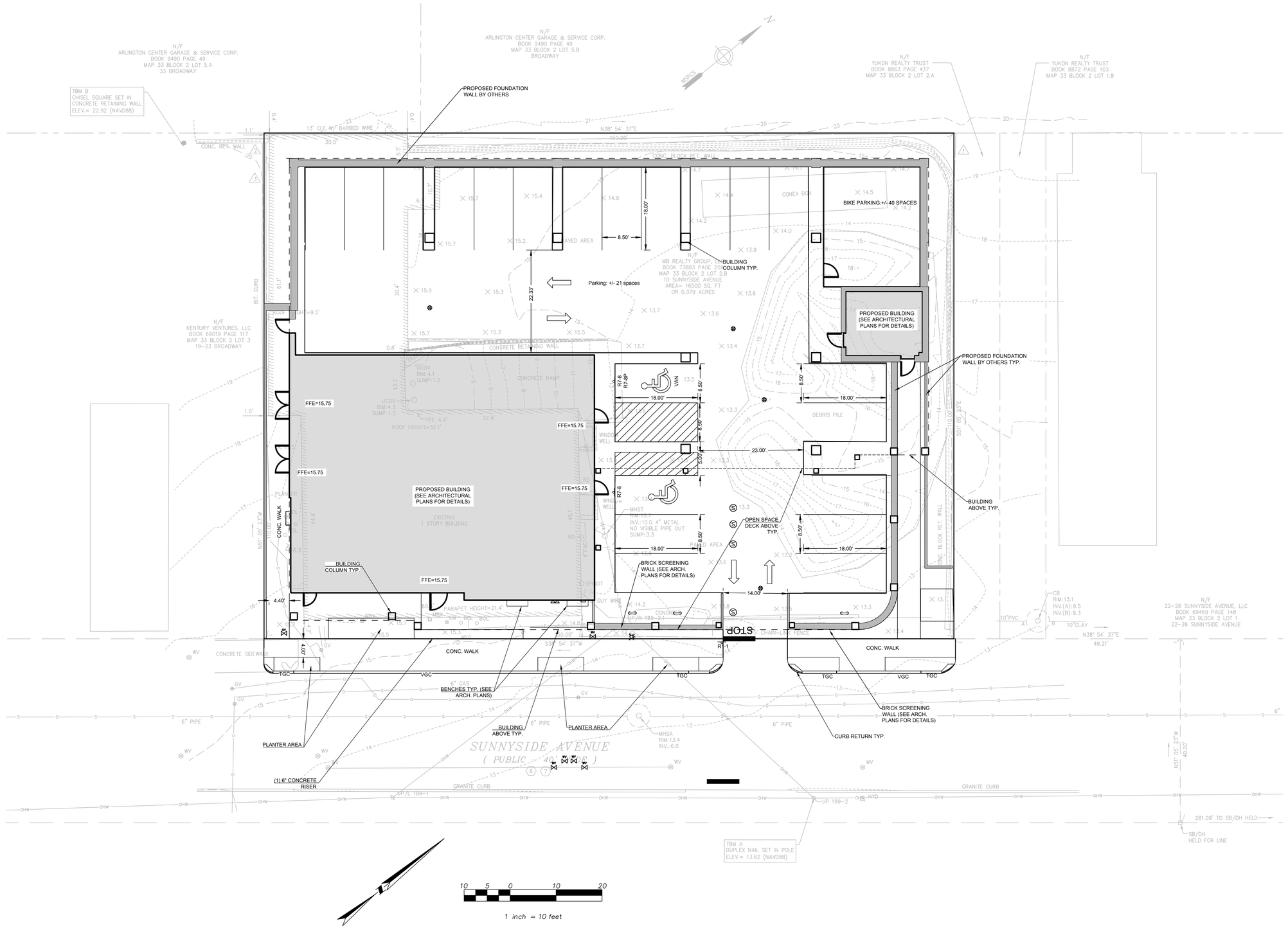
FGC — PROPOSED FLUSH GRANITE CURB

VGC — PROPOSED VERTICAL GRANITE CURB

LIMIT OF WORK

PROPOSED SIGN

OVERHEAD BUILDING LOCATION



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REVISIONS ON SHEET

SCALE
1" = 10'

UTILE PROJECT NUMBER
Arlington, MA

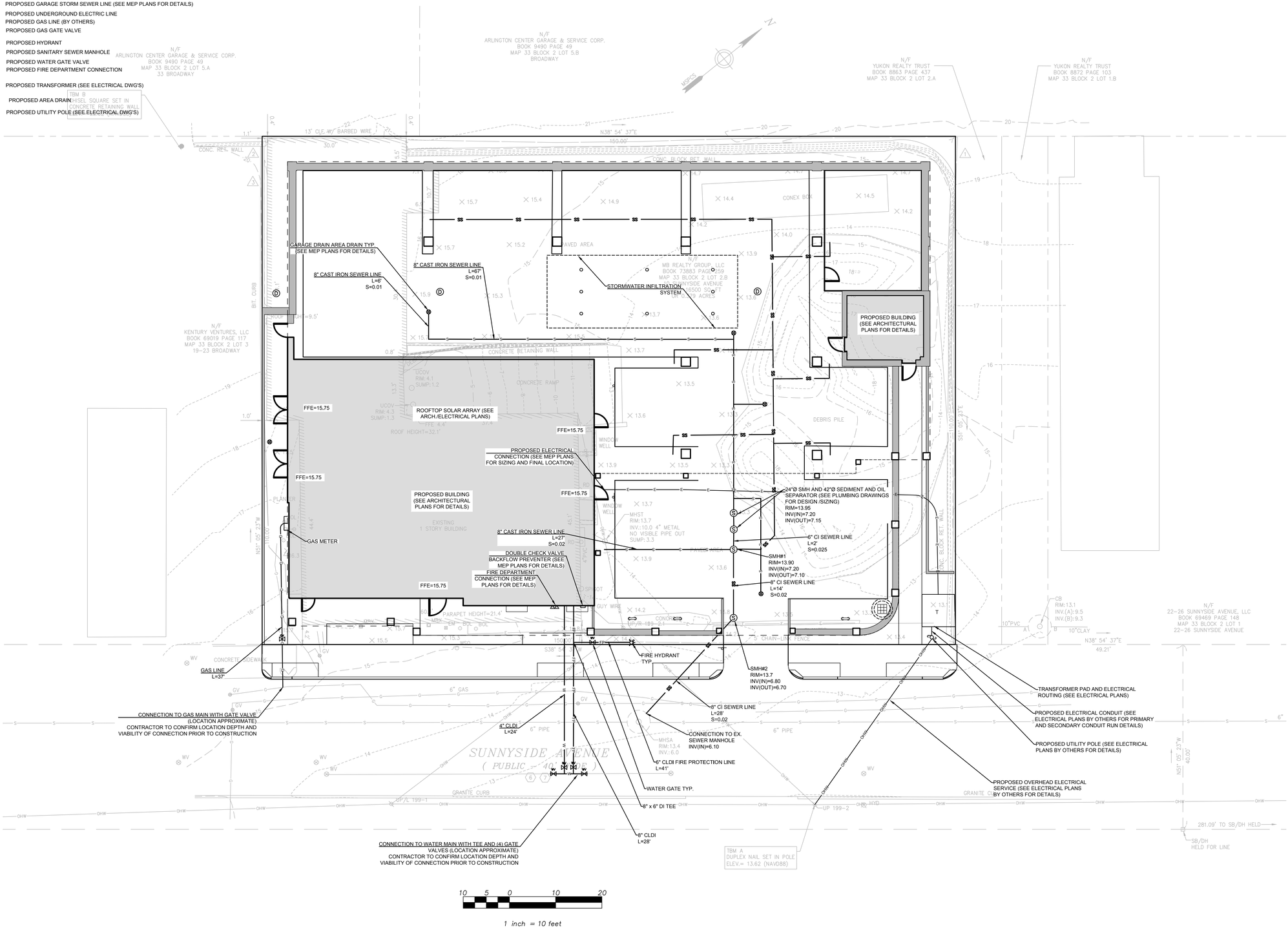
SITE LAYOUT PLAN

C2.00

11/8/2022 1:21:43 PM

LEGEND:

- W — PROPOSED WATER LINE
- FP — PROPOSED FIRE PROTECTION LINE
- SS — PROPOSED SANITARY SEWER LINE (SEE MEP PLANS FOR DETAILS)
- S — PROPOSED GARAGE STORM SEWER LINE (SEE MEP PLANS FOR DETAILS)
- E — PROPOSED UNDERGROUND ELECTRIC LINE
- G — PROPOSED GAS LINE (BY OTHERS)
- PROPOSED GAS GATE VALVE
- PROPOSED HYDRANT
- S SMH — PROPOSED SANITARY SEWER MANHOLE
- PROPOSED WATER GATE VALVE
- PROPOSED FIRE DEPARTMENT CONNECTION
- T — PROPOSED TRANSFORMER (SEE ELECTRICAL DWG'S)
- PROPOSED AREA DRAIN
- PROPOSED UTILITY POLE (SEE ELECTRICAL DWG'S)



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UTILE PROJECT NUMBER Arlington, MA

SITE UTILITY PLAN

C3.00

11/8/2022 12:21:43 PM

LEGEND:

- PROPOSED INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED SPOT GRADE
- EXISTING GRADE TO REMAIN (V.I.F.)
- PROPOSED TOP/BOTTOM OF WALL (NOT FOUNDATION)
- PROPOSED TOP/BOTTOM OF CURB
- PROPOSED TOP/BOTTOM OF STEP
- PROPOSED RIM ELEVATION (TO FINAL GRADE)
- VERIFY GRADE IN FIELD \ TO BE SET
- PROPOSED DRAINAGE FLOW DIRECTION AT GRADE

TBM B
CHISEL SQUARE SET IN CONCRETE RETAINING WALL
ELEV.= 22.92 (NAVD88)

TBM A
DUPLEX NAIL SET IN POLE
ELEV.= 13.62 (NAVD88)

PROPOSED FOUNDATION WALL BY OTHERS

PROPOSED BUILDING (SEE ARCHITECTURAL PLANS FOR DETAILS)

EXISTING 1 STORY BUILDING

PROPOSED FOUNDATION WALL BY OTHERS TYP.

BRICK SCREENING WALL (SEE ARCH. PLANS FOR DETAILS)

2% MAX SLOPE IN ALL DIRECTIONS ON TRANSFORMER PAD SET LEVEL AT 14.33

4" CURB REVEAL TC 15.33 BC (15.20)

7" CURB REVEAL TC 14.86 BC (14.28)

4" CURB REVEAL TC 13.85 BC (13.52)

SUNNYSIDE AVENUE
(PUBLIC - 40' WIDE)

1 inch = 10 feet

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SCALE 1" = 10'

UTILE PROJECT NUMBER Arlington, MA

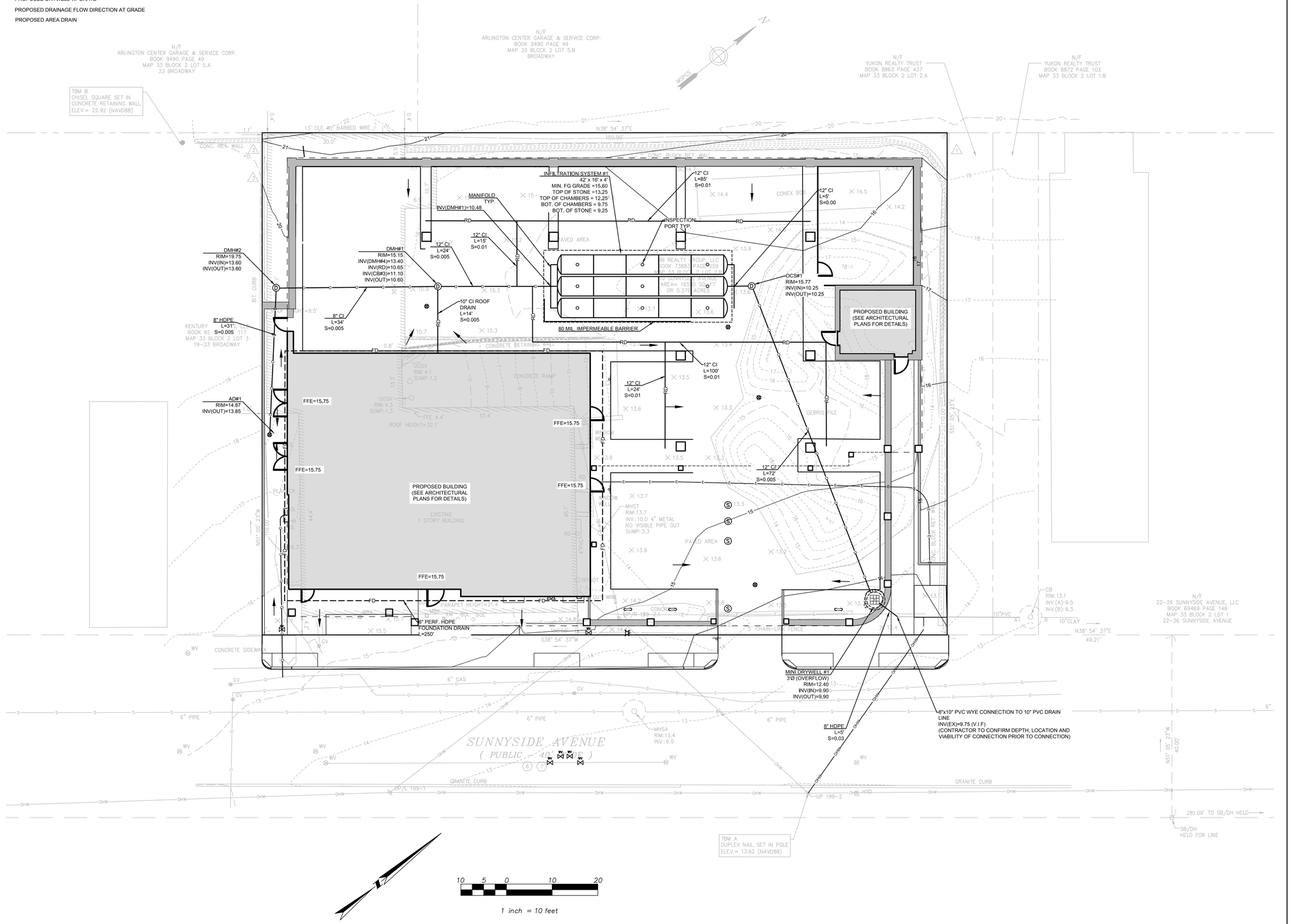
GRADING PLAN

C4.00

11/8/2022 12:43 PM

LEGEND:

- D — PROPOSED STORM DRAINAGE LINE
- RD — PROPOSED ROOF DRAIN LINE (SEE MEP PLANS FOR DETAILS)
- FD — PROPOSED FOUNDATION DRAIN LINE
- DMH — PROPOSED STORM DRAINAGE MANHOLE
- CB — PROPOSED CATCH BASIN
- PROPOSED DRYWELL W/ GRATE
- PROPOSED DRAINAGE FLOW DIRECTION AT GRADE
- PROPOSED AREA DRAIN



208 of 223

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474
PROJECT

Housing Corporation of Arlington

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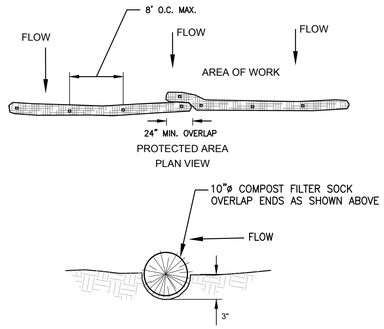
UTILE PROJECT NUMBER: Arlington, MA

STORMWATER MANAGEMENT PLAN

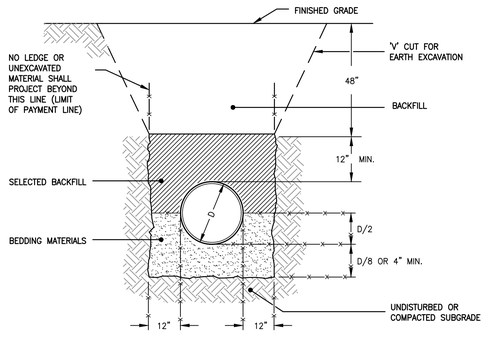
C5.00

11/8/2022 1:21:43 PM



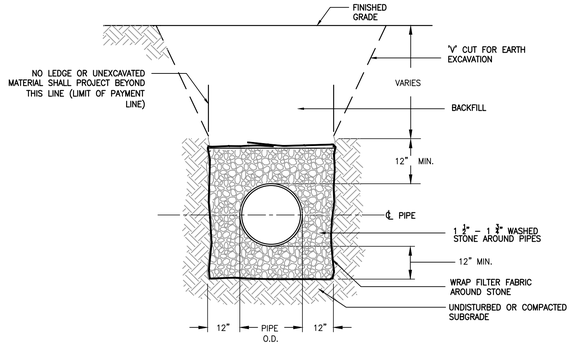
1 COMPOST FILTER SOCK

NTS



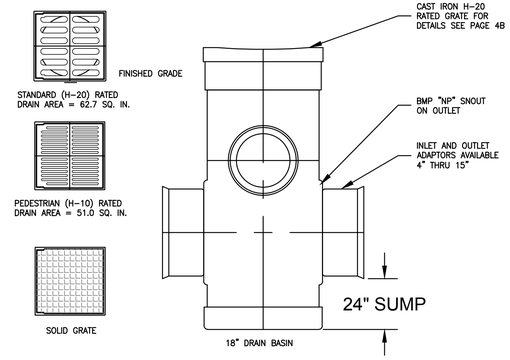
2 TRENCH SECTION - C.L.D.I. WATER PIPE

NTS



3 TRENCH SECTION - HDPE PIPE

NTS



4 'NYLOPLAST' AREA DRAIN

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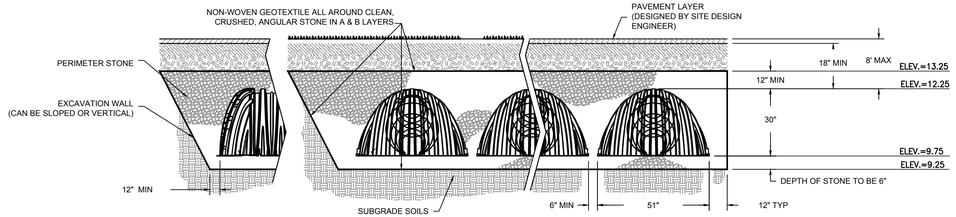
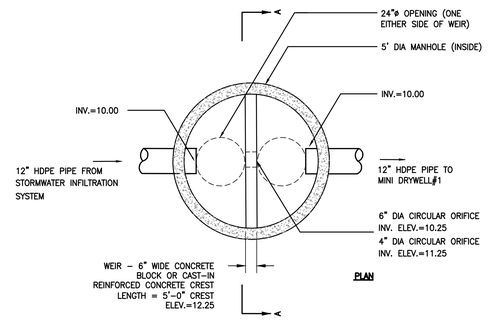
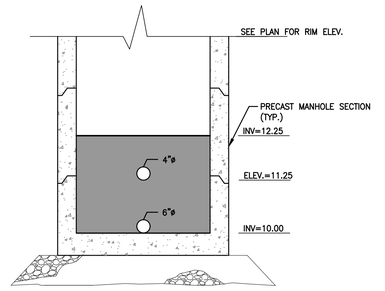


5 UNDERGROUND DRAINAGE SYSTEM

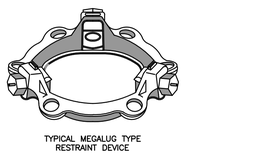
NTS





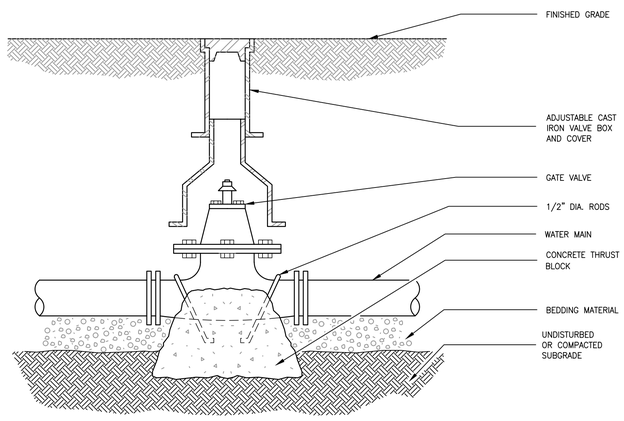
6 OUTLET CONTROL STRUCTURE (OCS-1)

NTS



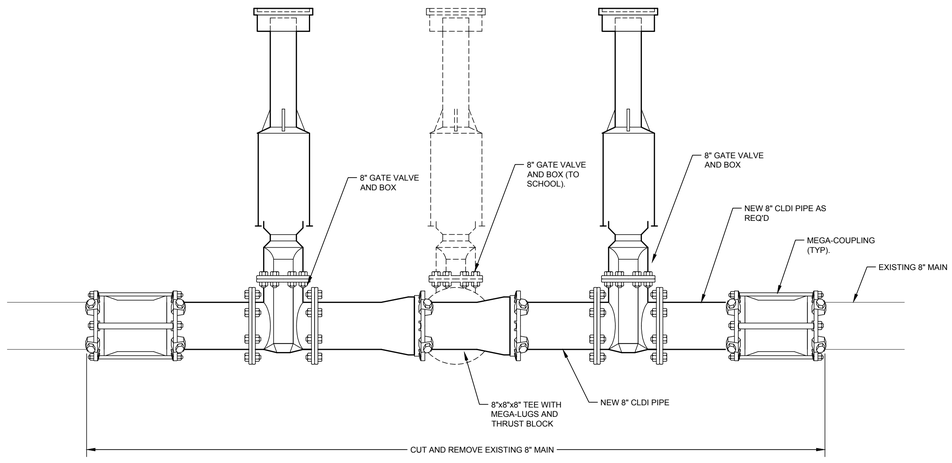
7 MEGALUG DETAIL

NTS



8 GATE VALVE AND BOX

NTS



9 WATER MAIN CUT IN DETAIL (SECTION)

NTS

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C6.00

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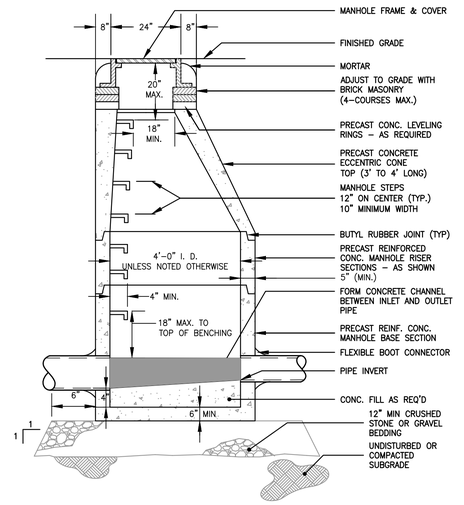
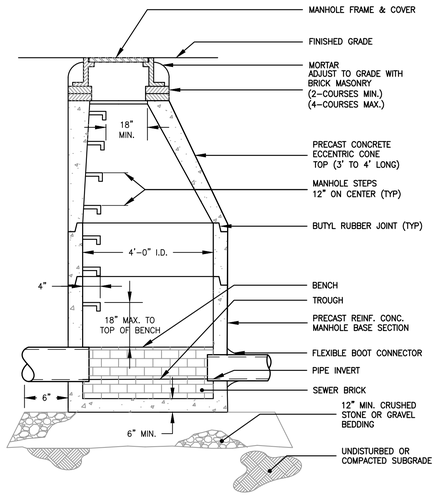


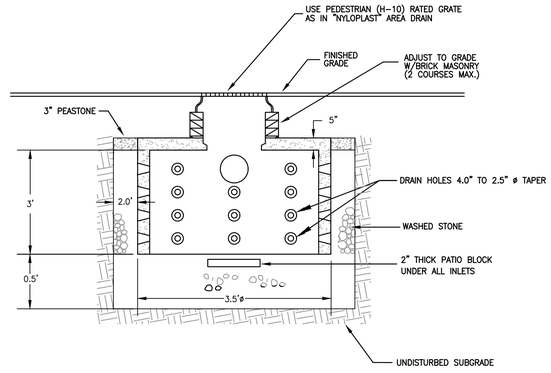
1 PRECAST STORM DRAIN MANHOLE

NTS



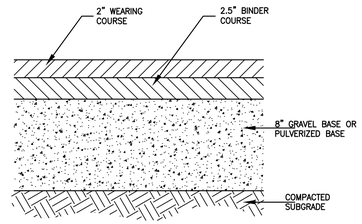
2 PRECAST SANITARY MANHOLE

NTS



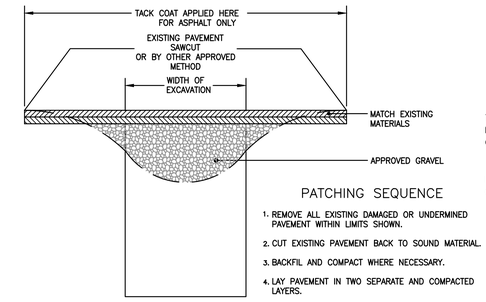
3 MINI-DRY WELL

NTS



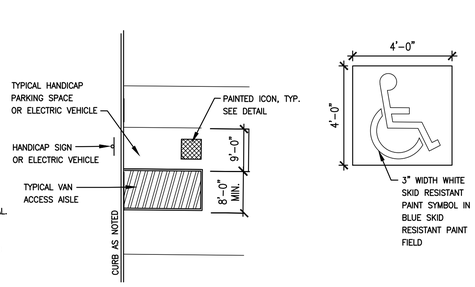
4 BITUMINOUS PAVEMENT

NTS



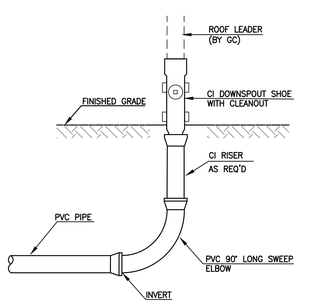
5 TRENCH PATCHING DETAIL

NTS



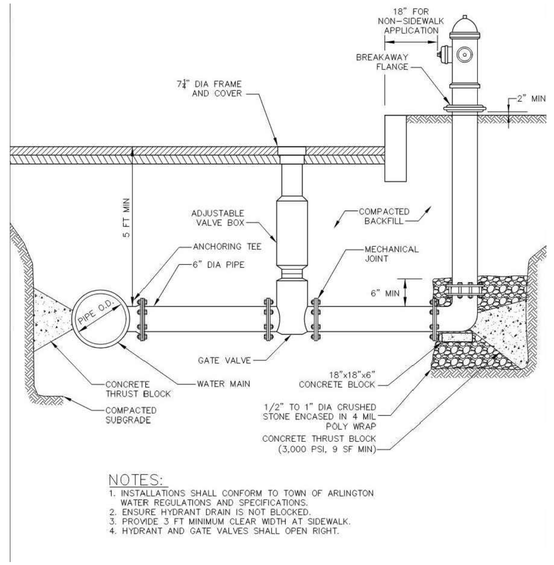
6 PAVEMENT MARKING DETAIL

NTS



7 ROOF LEADER

NTS



8 HYDRANT

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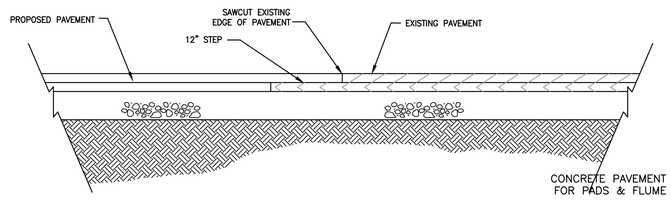

9 PAVEMENT PATCHING DETAIL

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UTILE PROJECT NUMBER Arlington, MA

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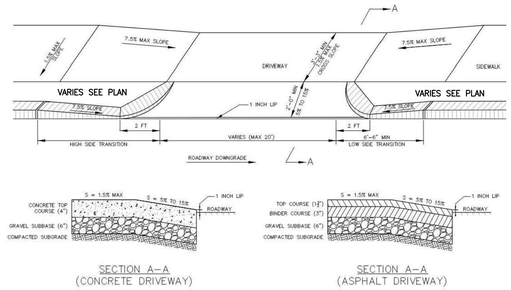
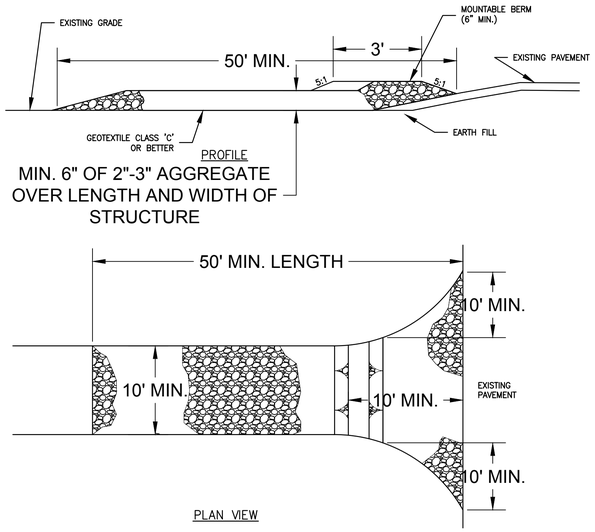


SECTION A–A
(CONCRETE DRIVEWAY)

SECTION A–A
(ASPHALT DRIVEWAY)

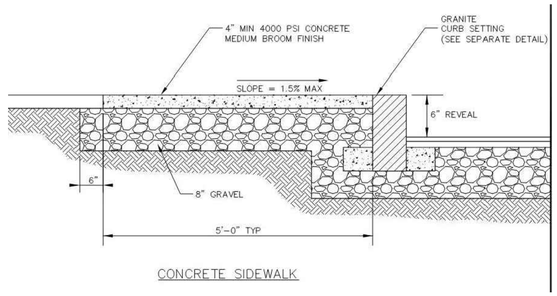
1 DRIVEWAY APRON (TOWN OF ARLINGTON STANDARD)

NTS



3 STABILIZED CONSTRUCTION ENTRANCE

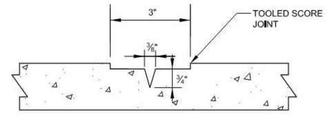
NTS



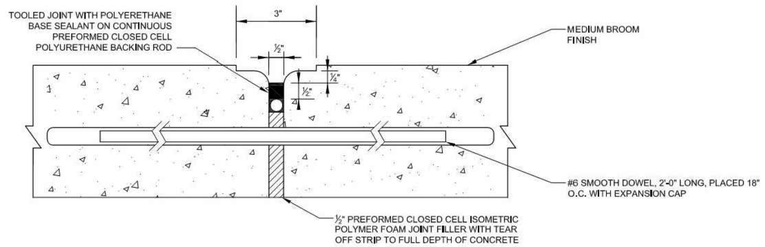
CONCRETE SIDEWALK

2 CONCRETE SIDEWALK

NTS



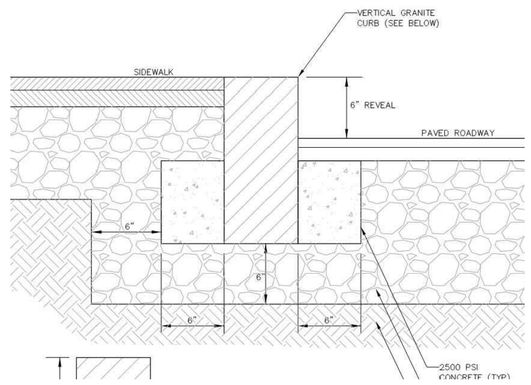
CONTROL JOINT



EXPANSION JOINT

4 CONCRETE SIDEWALK JOINTS

NTS



5 VERTICAL GRANITE CURB

NTS

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1 L1
1/8" = 1'-0"

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REVISIONS ON SHEET

SCALE 1/8" = 1'-0"
UTILE PROJECT NUMBER 2244

FLOOR PLAN - FIRST FLOOR

A1.01

3/9/2023 11:11:26 AM

1 L2
1/8" = 1'-0"

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SCALE 1/8" = 1'-0"
UTILE PROJECT NUMBER 2244

FLOOR PLAN - SECOND FLOOR

A1.02

3/9/2023 11:11:35 AM

1 L3
1/8" = 1'-0"

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SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2244**

FLOOR PLAN - THIRD & FOURTH FLOORS

A1.03

3/9/2023 11:11:43 AM

1 L5
1/8" = 1'-0"

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SCALE 1/8" = 1'-0"
UTILE PROJECT NUMBER 2244

FLOOR PLAN - FIFTH FLOOR

A1.05

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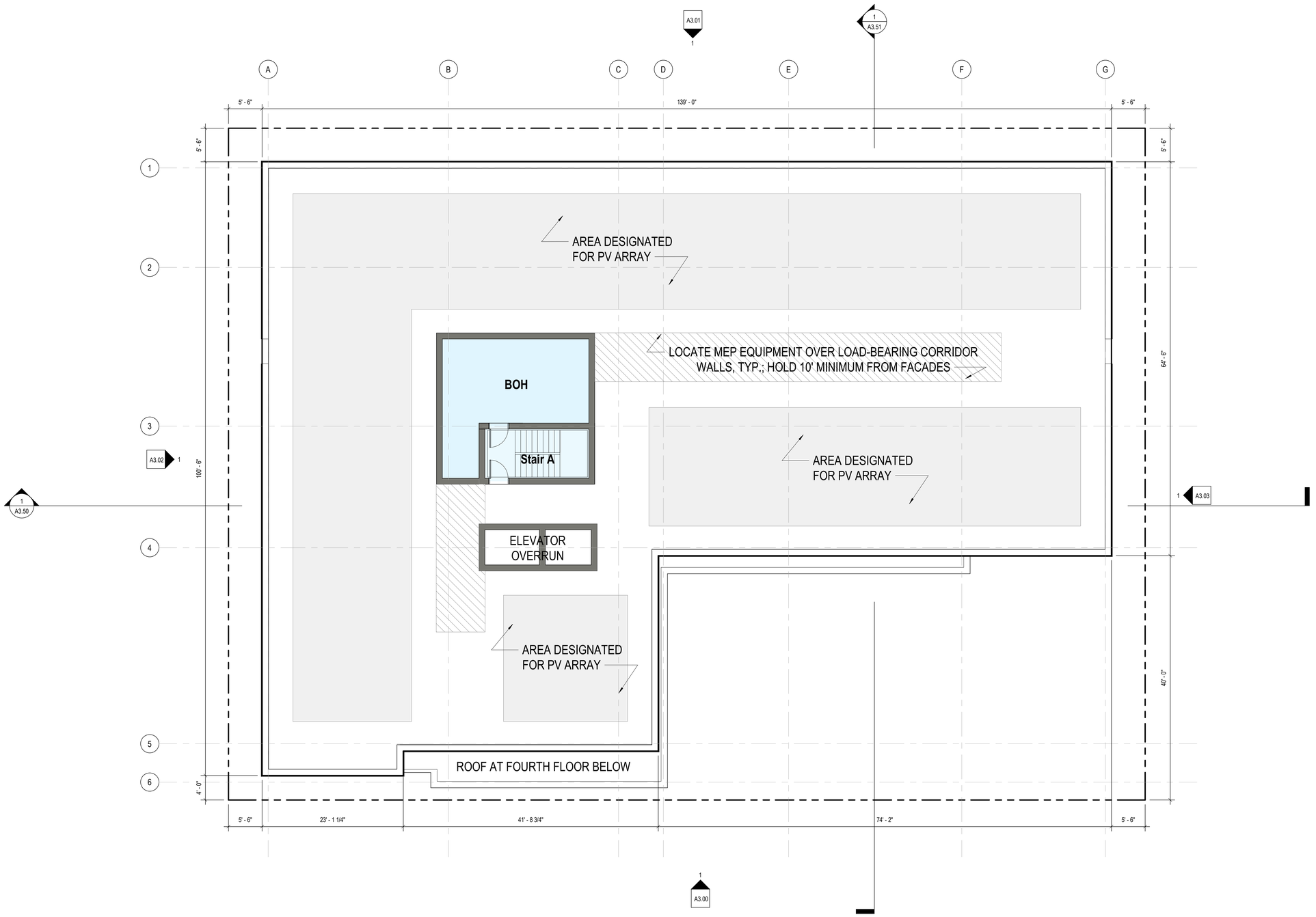

1 ROOF
1/8" = 1'-0"

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UTILE PROJECT NUMBER **2244**

FLOOR PLAN - ROOF

A1.07

3/9/2023 11:11:53 AM

1 EAST ELEVATION (SUNNYSIDE AVE)
1/8" = 1'-0"

ELEVATION NOTES

1. 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
2. 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
3. PTD. FIBER CEMENT PANEL
4A. BRICK RUNNING BOND
4B. METAL SCREEN
4C. BRICK TEXTURED PATTERN
5. OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
6. METAL SCREEN RAILING
7. CONCRETE RETAINING WALL

A. HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
B. THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
C. EXTERIOR HOLLOW METAL SERVICE DOOR

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P.O. BOX #1551
LITTLETON, MA 01460
P 978.486.4301
M/E/P/FP

STAMP

DATE	ISSUE / REVISION
03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2244**

EXTERIOR ELEVATION - EAST (SUNNYSIDE AVE)

A3.00

3/9/2023 11:12:04 AM

1 WEST ELEVATION (REAR)
1/8" = 1'-0"

ELEVATION NOTES

1. 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
2. 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
3. PTD. FIBER CEMENT PANEL
4A. BRICK RUNNING BOND
4B. METAL SCREEN
4C. BRICK TEXTURED PATTERN
5. OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
6. METAL SCREEN RAILING
7. CONCRETE RETAINING WALL

A. HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
B. THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
C. EXTERIOR HOLLOW METAL SERVICE DOOR

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474
PROJECT

Housing Corporation of Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.859.5294 **F** 000 000.0000
OWNER

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200 **F** 617 423.1414
utiledesign.com
ARCHITECT

SAMIOTES CONSULTANTS INC.

20 A STREET
FRAMINGHAM, MA 01701
P 508.877.6688
CIVIL

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SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2244**

EXTERIOR ELEVATION - WEST (REAR)

A3.01

3/9/2023 11:12:16 AM

1 SOUTH ELEVATION
1/8" = 1'-0"

ELEVATION NOTES

1. 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
2. 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
3. PTD. FIBER CEMENT PANEL
4A. BRICK RUNNING BOND
4B. METAL SCREEN
4C. BRICK TEXTURED PATTERN
5. OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
6. METAL SCREEN RAILING
7. CONCRETE RETAINING WALL

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UTILE PROJECT NUMBER **2244**

EXTERIOR ELEVATION - SOUTH

A3.02

3/9/2023 11:12:27 AM

1 NORTH ELEVATION1
1/8" = 1'-0"

ELEVATION NOTES

1. 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
2. 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
3. PTD. FIBER CEMENT PANEL
4A. BRICK RUNNING BOND
4B. METAL SCREEN
4C. BRICK TEXTURED PATTERN
5. OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
6. METAL SCREEN RAILING
7. CONCRETE RETAINING WALL

A. HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS

B. THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM

C. EXTERIOR HOLLOW METAL SERVICE DOOR

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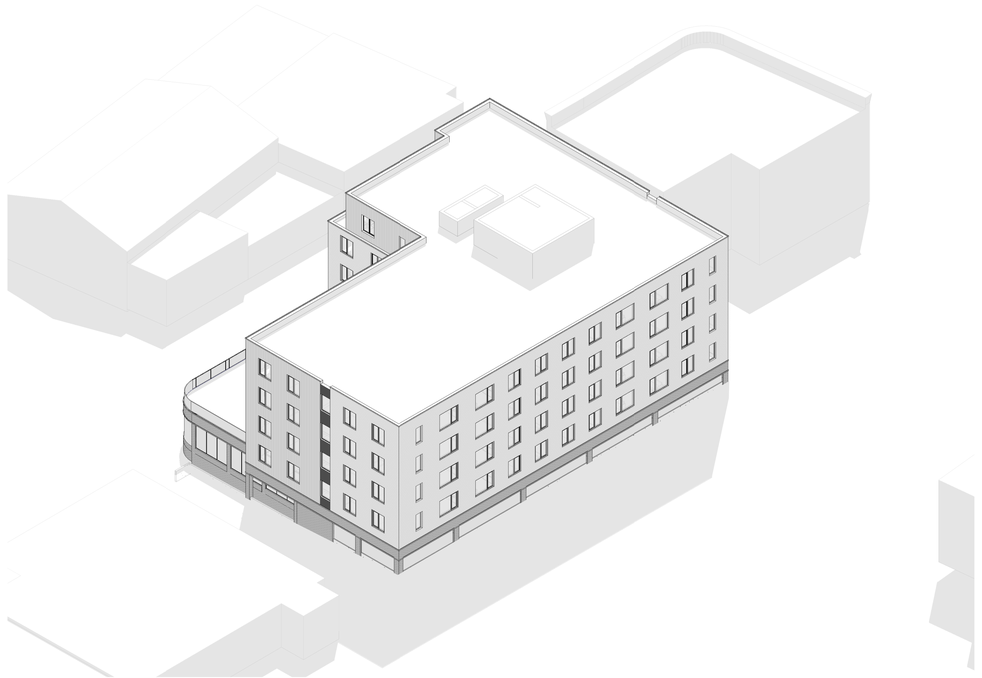
SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2244**

EXTERIOR ELEVATION - NORTH

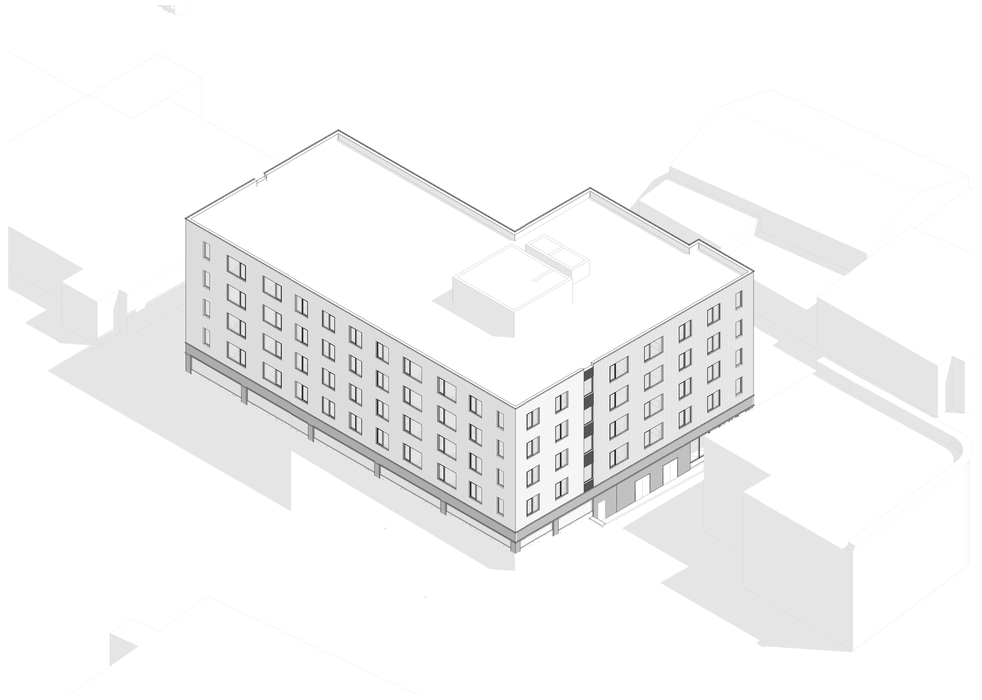
A3.03

3/9/2023 11:16:25 AM

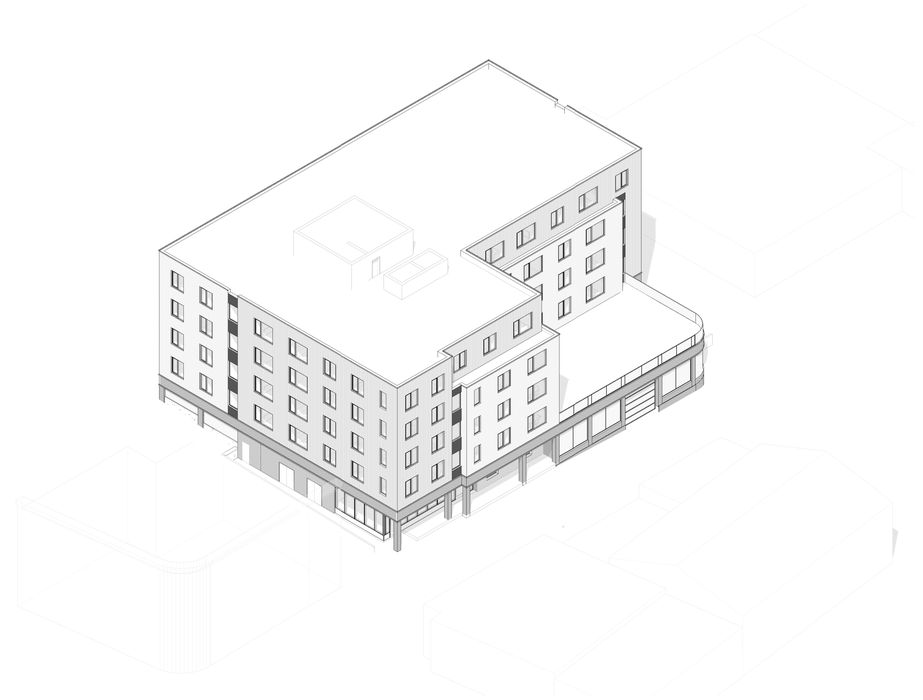
4 East Axon



3 North Axon



2 West Axon



1 South Axon

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REVISIONS ON SHEET

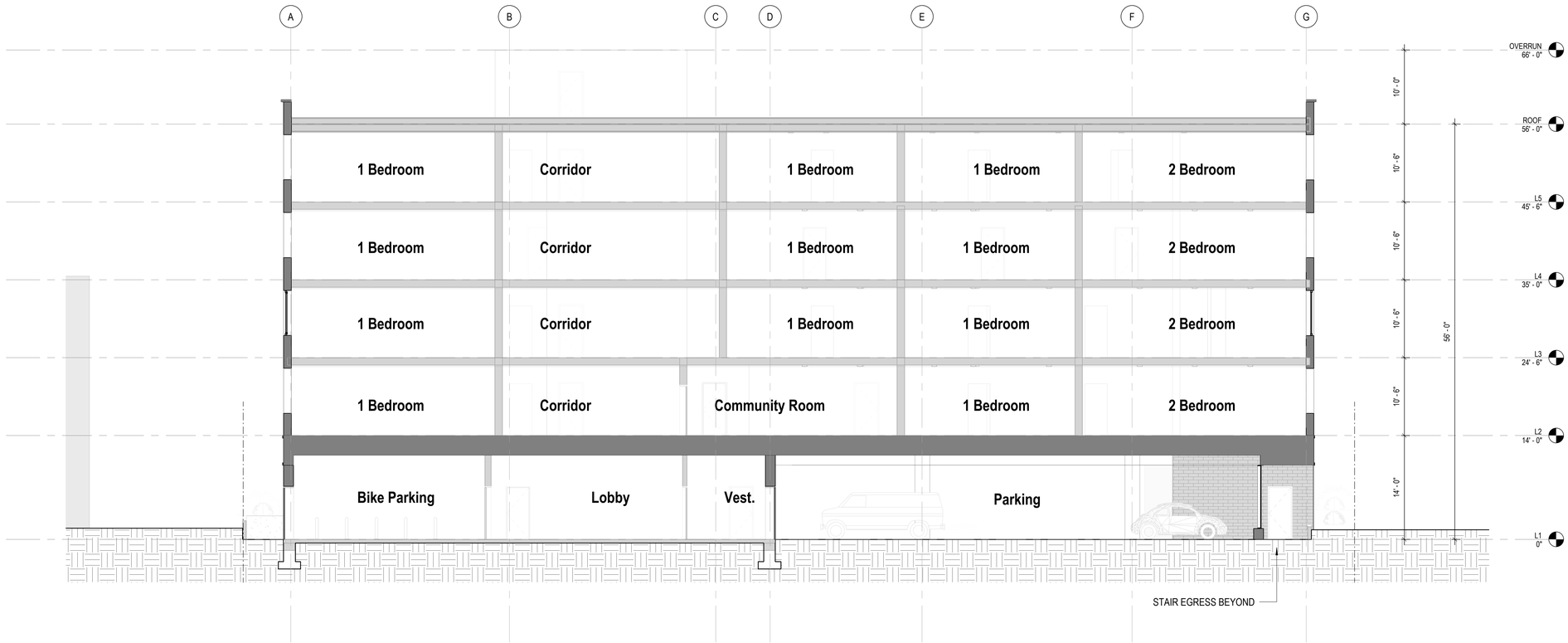
SCALE

UTILE PROJECT NUMBER
2244

BUILDING AXONS

A3.10

3/9/2023 11:12:58 AM



1 SECTION (EAST-WEST)
1/8" = 1'-0"

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SCALE 1/8" = 1'-0"
UTILE PROJECT NUMBER 2244

BUILDING SECTIONS - E-W

A3.50

3/9/2023 11:13:02 AM

1 SECTION (NORTH-SOUTH)
1/8" = 1'-0"

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SCALE **1/8" = 1'-0"**
UTILE PROJECT NUMBER **2244**

BUILDING SECTIONS - N-S

A3.51

3/9/2023 11:13:04 AM